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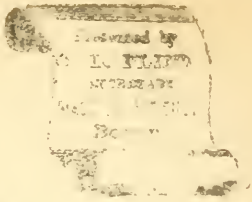

TRANSACTIONS

OF THE

AGRICULTURAL SOCIETIES

IN THE

State of Massachusetts,

FOR

1852.

ALSO THE

PROCEEDINGS

OF THE

STATE BOARD OF AGRICULTURE.

COLLATED AND PREPARED

BY AMASA WALKER,

SECRETARY, PRO TEM.

BOSTON:

WHITE & POTTER, PRINTERS TO THE STATE.

1853.

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ADVERTISEMENT.

By the act of 1852, chap. 142, establishing the State Board of Agriculture, it was provided that "all the duties of the Secretary of the Commonwealth relating to the returns of agricultural societies shall be performed by the Secretary of the Board of Agriculture." In compliance with this enactment, the annual returns of the different agricultural societies were placed in the hands of the Secretary, *pro tempore*, of the State Board, by whom the present volume of Transactions has been prepared.

The returns have been found more full and valuable in statistics and in statements of experiments, than in preceding years, and more societies have published their proceedings in a pamphlet form; a practice that ought to become universal, since the usefulness and prosperity of any society is greatly promoted thereby. No regular system having yet been established in regard to returns, there is a want of uniformity in them, and the results are therefore less satisfactory than they would otherwise be; while the labor of collating them is increased many fold. These difficulties will doubtless all be obviated hereafter. A State Board having been organized and intrusted with full power and discretion in regard to the matter, such forms and tables will be furnished to the several societies,

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and such statements required of them, as will secure very desirable improvements, and render the future volumes of the Transactions more complete and reliable than the present.

The greatly increased interest in the subject of agriculture, too, which is pervading all parts of the Commonwealth, cannot fail to enhance the efficiency of the several societies.

The State Board having, after considerable delay, succeeded in securing the services of Charles L. Flint, Esq., as its permanent Secretary, a gentleman of high qualifications for the office and greatly devoted to the interests of agriculture, we may confidently anticipate that a new and powerful impulse will be given to the cause in Massachusetts.

The present volume consists of two parts; first, an abstract of the Transactions of the several agricultural societies enjoying the patronage of the State; secondly, the Proceedings of the State Board of Agriculture. An Appendix is added, containing the Laws of the Commonwealth in relation to agricultural societies. This, it is believed, will be found convenient for reference by all persons concerned in the management of such societies.

The important enactment of the present legislature, changing the time when the annual returns of the societies must be made in order to secure the bounty of the State, is deserving of particular attention.

A. W.

May, 1853.

MEMBERS OF THE STATE BOARD OF AGRICULTURE FOR 1853.

EX OFFICIIS.

His Excellency JOHN H. CLIFFORD.
His Honor ELISHA HUNTINGTON.
E. M. WRIGHT, *Secretary of State.*

APPOINTED BY THE GOVERNOR AND COUNCIL.

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Worcester West — WILLIAM PARKHURST.
Hampshire, Franklin and Hampden — JOSEPH SMITH.
Hampden — FRANCIS BREWER.
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Norfolk — B. V. FRENCH.
Plymouth — SETH SPRAGUE.
Bristol — J. H. W. PAGE.
Barnstable — C. B. H. FESSENDEN.

CHARLES L. FLINT, *Secretary.*

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AGRICULTURAL EXHIBITIONS FOR 1853.

Worcester County Society,	September	21 & 22.
Norfolk County Society,	"	27 & 28.
Essex County Society,	"	28 & 29.
Housatonic County Society,	"	28 & 29.
Worcester West County Society,	"	30.
Bristol County Society,	October	4 & 5.
Middlesex County Society,	"	4 & 5.
Berkshire County Society,	"	5 & 6.
Plymouth County Society,	"	6.
Franklin County Society,	"	6 & 7.
Barnstable County Society,	"	7.
Hampshire, Franklin and Hampden, Society,	"	11 & 12.
Hampden County Society,	"	13 & 14.
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ABSTRACT.

MASSACHUSETTS SOCIETY FOR PROMOTING AGRICULTURE.

The President and Secretary of the Massachusetts Society for Promoting Agriculture, report to the Secretary of the Commonwealth, as is made their duty to do, by the statute of 1847, that the records of their transactions are made, as heretofore, mostly of reports concerning the care of the imported Alderney stock.

It is well known that the attention of the Trustees has long been directed to the important and disputed question, how far and in what way our native breed of cattle may be improved by the admixture of foreign races, and more particularly, which of these races, from its valuable qualities, for work, or for the dairy, and its capacity of thriving in our climate, and under the degree of care and protection which can be conveniently given to it by our farmers, would best repay the expense and trouble necessarily incident on its first introduction. These reasons, as is well known, led the Society, some years since, to purchase and to import several fine animals, of the North Devon and Ayrshire breeds. As soon as the stock was sufficiently multiplied, pairs of one or the other of these breeds were distributed to all our County Societies; and those not so disposed of, were sold on account of this Society. As far as respects the Ayrshire breed, the result of the experiments is less satisfactory than was expected.

It would be unsafe to assert, that the introduction of a race so highly esteemed in Europe, on account of its value for the purposes of the dairy, has been productive of no advantage to our stock. It is certainly not improbable that some good

consequences may have followed, though it may be difficult to trace and define them. But in many instances, the Ayrshire cattle distributed by this Society have failed to give satisfaction to the County Societies, and the Trustees did not feel warranted to continue or repeat the experiment of importing and rearing animals of this breed. The experiment was then undertaken, of importing and rearing animals of the Jersey breed, (known among us as the Alderney,) and is still in progress. The animals of this breed, belonging to this Society, are under the care of the Treasurer, Mr. Motley. They are all in good health, and bore, without inconvenience, the unusually rigorous weather of last winter, with no greater degree of protection than is commonly given to our own cattle in this neighborhood, a fact which is, at least, presumptive evidence that they are sufficiently hardy for our climate. Nothing has occurred to throw any doubt on the character of this race, as a most excellent stock for the dairy, and the report of Mr. Motley, hereto subjoined, exhibits in detail their valuable qualities, as adapted more especially to the moderate sized estates in the vicinity of our large towns.

Mr. Motley's Report.

Perhaps, at this time, it may be desirable for me to give some general statement, and my opinion of the Jersey cattle in my custody, belonging to this Society.

Much has been written in the various agricultural papers of the day, upon the different breeds of cattle, and every writer seems to have his own peculiar notions and prejudices in favor of some particular breed, so that the farmer, after reading all he can find, is still quite at a loss for a decision.

This Society made a fair trial of the Ayrshire and Devons, and from what we can learn from the various Societies, in whose care the animals have been placed, I fear the Ayrshire will hardly give satisfaction. The North Devons, all agree, make the best working oxen; they are tractable, fast walkers, of good size, and very fine appearance, and, in some parts of Worcester County, are more highly prized than any other. The importation of the Society, of this breed, has undoubtedly done much to improve the stock of working oxen. As to

their qualities for stock, as milch cows, there seems to be a difference of opinion. My own is, that they are inferior to many others. The Jerseys were next tried, and from the time now elapsed, say eighteen months, since the importation, we can safely answer the question, which seemed to be the most important, Can they endure a severe climate? decidedly in the affirmative. This we can prove, not only from our own experience, but from that of other persons, who made importations of these animals at the same time.

Whatever differences of opinion may prevail respecting the comparative merits of the different breeds of cattle, the Jerseys, for the purposes of the dairy, (making butter,) I think all will agree, stand first; the quality of their milk being so rich, that five, and sometimes even so small a quantity as four quarts of it are sufficient to make a pound of butter, and, indeed, in quantity, they often come up to some of the best milkers, say fifteen and even twenty quarts per day.

It may be well to give some statement of what some of the cows belonging to this Society have yielded. A heifer, two years old only, three weeks after dropping her calf, gave milk enough, in seven days, to make eight and one-half pounds of superior butter. This, I think, will be acknowledged by all to be a very large quantity for so young an animal, and this without any grain whatever. The cow Countess, five years old, has made twelve pounds in one week, say about six weeks after calving, and seven pounds in the same time in the month of November, about six months after calving. They are easily kept, are very gentle and docile, and I must beg leave to differ entirely with Mr. Parkinson, who says, "they have a voracious appetite, and will devour almost as much as a short horn." In the Islands of Jersey and Guernsey, cows are often found, that will make fifteen pounds of butter per week, and instances are known, of nearly twenty pounds. So well satisfied am I of their superiority for this part of the State, that I have made further importations since that for the Society, and have now an order for more. The risk and expense of getting them here being so great, it will probably be some years before they are common in the country, but I fully believe, in time, no farmer will be without one or more Jersey cows.

The whole number of the Alderney stock now in my care is eleven. A daguerreotype has been taken of the original stock, at the repeated desire of W. S. King, Esq., Editor of the Journal of Agriculture, from which engravings will be made.

The records also show that a committee was appointed, at the request of the Agricultural Convention, to attend their meeting, and by their report, it appeared that the gentlemen composing that Board were desirous of giving a wide, gratuitous circulation to some of the reports which had been made to them on various subjects of agricultural interest. But being, as yet, a voluntary association, they were without the necessary funds to defray the expense. The Trustees at once authorized the delegates to this Board from their own number, (Messrs. Gray, Everett and Winthrop,) to advance the sum of $300 for the distribution of these reports, and it is hoped that the measure was not without beneficial results. At all events, it was an earnest of sincere desire of the Trustees to encourage, to the extent of the means at their disposal, every attempt to promote the cause of agricultural information. The State Board of Agriculture, having since been organized under the laws of the Commonwealth, will doubtless hereafter have sufficient resources at their own command, and they have the best wishes of the Trustees of the State Society for the successful accomplishment of all their designs.

A report, also, of Dr. Warren, chairman of the committee on the diseases of animals, was made to the Trustees, in which he refers to the importance of improving the knowledge and treatment of the diseases of horses and cattle. After unsuccessful attempts to establish a course of lectures on anatomy and diseases of the horse, the committee at length succeeded in obtaining the aid of a gentleman, (Dr. Slade,) who had been some years in Europe, and improved such opportunities as presented, to acquaint himself with veterinary science. The Trustees have therefore engaged this gentleman to give as many lectures as may be thought useful, at the rate of one a week, beginning about the middle of the present month of January, 1853. It is proposed, if proper arrangements can be made, to open them to all members of the legis-

lative body, as well as those of the Agricultural Society, and friends whom they may think proper to invite.

In concluding this report, we cannot forbear a passing allusion to the dispensation of Divine Providence, in removing by death our late distinguished Vice President, the Hon. Daniel Webster. This event was duly noticed by the Trustees at their first meeting after it had taken place, and they deem it unnecessary to say more of one who, in addition to his other high claims to distinction, was so generally and so favorably known as a most intelligent and constant friend and votary of Agriculture.

JOHN C. GRAY, *President.*

BENJ. GUILD, *Recording Secretary.*

January 8th, 1853.

ESSEX COUNTY AGRICULTURAL SOCIETY.

In accordance with the wishes of many of the members of this society, the experiment was this year made of holding its annual cattle show and fair during two days. The experiment was completely successful. The exhibition came off on Wednesday and Thursday, the 29th and 30th of September last, at Lawrence. The first day was appropriated to the examination, by the committees, of the stock and articles entered for premiums, and the second to the ploughing match, the trial of working oxen, the annual meeting and dinner of the society, and the award of premiums. The show of animals was continued through both days. The hall of exhibition was opened to the public on the evening of Wednesday and the whole of Thursday. Over seven thousand persons were admitted to the hall, on payment of the sum of ten cents each.

The show of fruits, particularly of apples, was unusually large and fine. Nearly all the new and valuable varieties raised in New England, were exhibited, and at the same time numerous specimens of our native standard varieties, thus giving evidence that our cultivators, though disposed to test new varieties of fruit, are not so captivated by novelties, as to give up the cultivation — and the extensive cultivation, of what has uniformly proved productive and profitable. In the show of vegetables, there was some improvement over former years, but by no means such an improvement as should mark our exhibitions, nor such as is worthy of the county. We cannot but hope that this department will, at the next annual fair, receive, as it deserves, the liberal and enthusiastic support of the far-famed market gardeners of Danvers, of Marblehead, of Beverly, and other towns in the ounty. We fear that, in this respect, we are better known in the Boston market

than at home. We fear that half of the county knows not what the other half is doing in the raising of vegetables. We know,—for we have seen their rich acres—that our market gardeners can show onions, and squashes, and cabbages, and the different varieties of esculent roots, in quality and quantity per acre, second to none in the State; and we invite them, earnestly, to take an honest pride in these products of their skill and industry, and present each a few baskets full at our next show, for competition and admiration.

The show of neat stock generally, did not quite equal, either in numbers or quality, the expectation of those who know what the county is capable of exhibiting. The severe drought of the past summer, may account in part for the failure in this respect. The show of swine, however, especially the Suffolks, was beyond anything we have seen in the county, for years past.

The ploughing match, both with oxen and with horses, was never more spirited in Essex. Forty teams in all, entered the list of competitors. The work, too, was extremely well performed, and elicited the praise of all who witnessed it. To encourage a local pride in our towns, in having good working oxen, a premium was offered for the longest and best team exhibited from any town. Only one string of working cattle, however, was exhibited, to compete for this premium, probably for the reason that the object and terms of the offer were not fully understood,—many persons supposing that by "town teams," was meant the teams belonging to a municipal corporation, or its almshouse establishment, instead of a team composed of cattle owned by the farmers of the town.

The weather was uncommonly pleasant during the whole show, and the multitudes that flocked to it, interested, delighted, and, may we not believe, instructed,—afford a renewed evidence of the profits and pleasures of these annual gatherings. Order, sobriety and courtesy marked the day, and without disparagement to other public gatherings, we cannot but think that none has so strong a hold of the popular favor as this, the farmers' holiday.

The society was honored by the presence of President Hitchcock, of Amherst, as a delegate from the State Board of Agriculture.

The Address was delivered by Henry K. Oliver, Esq., of Lawrence.

MOSES NEWELL, *President.*

ALLEN W. DODGE, *Secretary.*

On Poultry.

The committee on poultry, in making up their report, regret to say, that the exhibition, as a whole, both as to number and quality of fowls, is not equal to that of last year.

The Committee award the first gratuity, of Five Dollars, to Messrs. S. & O. Southwick, for the best lot of fowls, consisting in part of Spanish, Dorkings, Shanghais, Guilderlands, Irish and English Games, Black Bantams and other varieties, mostly of pure blood. They also exhibited a fine specimen of China Geese.

These gentlemen seem to have sustained their high reputation as fowl-fanciers and breeders, both in the variety and great purity of their different kinds of stock.

David Manock, of Andover, exhibited the most perfect specimen of Bolton Greys the committee have ever seen. They award him the second gratuity, of . . . $1 50

Warner W. Tilton, of Haverhill, exhibited a lot of very fine African Bantams, the best fowls of the kind on the field. A gratuity was awarded to him of . 1 00

David Merrill, 2d, of Methuen, presented a coop of Golden Polands, which were of good quality, and the committee award him a gratuity of . . 1 00

To John Smith, of Methuen, a gratuity was awarded, for his excellent specimen of Cochin Chinas, of . 1 00

Henry K. Oliver, of Lawrence, exhibited a lot of good fowls, among them a fine pair of Cochin Chinas, for which, and other good specimens, they award him . 1 00

S. Marshall, of Lawrence, offered a pair of Poland Chickens, of good quality; gratuity, . . . 50

To T. L. Quimby, of Lawrence, for one pair of Shanghai Chickens, ... $0 50

To Thomas Hogan, of Andover, for a pair of White Shanghais, very good, ... 50

To Almanza T. Allen, of Lawrence, for a cross of Guilderland and Native, very good fowls, . . 50

To P. P. Holt, of Andover, for a pair of Shanghais, . 50

F. R. Frye, of Methuen, presented a Native Hen, with her fine family of *forty chickens*, all hatched this season, in three broods, the last only three days from the egg. For the prolific qualities of this fowl, the committee award a gratuity of 50

Hobart Clark, of Andover, exhibited a fine brood of Bremen Geese; gratuity, ... 1 00

Geo. W. Boynton, of Georgetown, for a pair of Flemish crested Ducks, ... 50

Mr. Boynton also exhibited a very superior lot of Fancy Pigeons, consisting of Pouters, Nuns, Barbs, Ruffs, Bald Pates, Carriers, English Carriers, Fan Tails, Trumpeters, Button Heads, Tumblers and Almond Tumblers. As a whole, it was a beautiful collection, and all, perhaps with a single exception, of the purest blood. The Ruffs and English Carriers were particularly beautiful. The committee award him . . 3 00

A. P. Bateman, of Georgetown, also offered a coop of Fancy Pigeons, several varieties, very fine, . . 1 00

Jacob A. Allen, of Lawrence, presented a specimen of Fancy Doves, consisting of Tumblers, Buff Necks and Fan Tails, very pure and beautiful, . . 1 00

There was also a fine lot of Turtle Doves on the ground, from J. W. Kimball, of Lawrence, but as they were not regularly entered, the committee were prevented from awarding any gratuity.

Some of the fowls were not shown to advantage, on account of their limited accommodations, being in coops better adapted for transportation than exhibition, and the committee would recommend to the Trustees to provide proper coops for future exhibitions, at the expense of the Society.

Fitch Poole, *Chairman.*

Sheep.

The committee on sheep, (being all present except Mr. Kent, and his place being supplied by S. H. Greene, of Ipswich,) proceeded to examine the only specimens offered. These were but two, and were owned by Doctor Joseph Kittredge, and Jacob Farnum, both of Andover. The lot of Dr. Kittredge consisted of four pure blood South Downs, and three others of a large variety of long-woolled sheep. They were all young, and were a part of a flock of twenty.

A noble animal of the Leicester breed, was noticed in the pen, by one of the committee, after the official examination, which, of course, the report cannot further notice, especially as no description was furnished by the owner.

The committee award the first premium, of six dollars, to Dr. Joseph Kittredge.

The other lot was owned by Jacob Farnum, and consisted of twelve in number, a part being lambs, but intended to be kept for breeding. The sixteen lambs were very handsome.

The committee award to Mr. Farnum the second premium, of five dollars.

In coming to the above result, the committee have not lost sight of the principle that premiums shall not be awarded as *matter of course*. It would have been fully within our province, we believe, to have reported that either or both have been unworthy of a premium, if such had been the fact. Such, however, is not the fact. The sheep of Dr. Kittredge, and the lambs, or young sheep, as they may be called, of Mr. Farnum, are of good quality, and both gentlemen are evidently disposed still further to improve their own sheep, and afford the facility for enabling others to improve theirs.

Whatever may be said of sheep raising in the hands of other people, it cannot be an unprofitable business with Dr. Kittredge, even in Essex county, where it receives, comparatively, so little attention. One of his sheep had her *second* lamb of this season with her in the pen, the *first* having been sold to the butcher for five dollars. In short, the quality of the Doctor's flock is such that he was offered $3 75 each for seventeen of his lambs; $5 00 each for four of them, and $4 00 for ten.

Dr. K. gives his *sheep* no grain, but the lambs as much meal as they will eat. His preference is for the largest Leicester sheep, and the pure South Down buck.

In conclusion, the committee cannot but say they are impressed painfully with the fact that so little attention is paid to sheep husbandry in our county. They are also painfully struck with the idea, that of the 5,000 sheep in the county, there should have been the representatives of two little flocks only. We hope for better things next year. But few of our farmers, it is true, can, like Mr. Jewett, of Middlebury, Vermont, expend $30,000 for French sheep, even if they should shear twenty pounds of wool apiece, like his; but every one who keeps a cow or two, may keep sheep enough for the stocking yarn of himself and his family. For, according to the idea of the late lamented Asa T. Newhall, every pasture will carry as many sheep as it now does cows, in addition to the cows, without sensible loss to them.

The following letter, received previous to the show, by the chairman, from Mr. Page, a member of the committee, is appended to the report, and will be regarded as the most important part of it.

David Choate, *Chairman.*

Nathan Page's Letter.

Danvers Port, 9th Mo. 8th, 1852.

Friend Choate: — Thy letter of the 31st ult. was duly received. To thy request for information on sheep husbandry I must reply, that I have had no experience in the business in this county or State. Sixteen years ago I kept sheep in the State of Vermont. I will offer some remarks on my method then and there, but cannot promise that they will contain much important information.

For about fourteen years, while living in Addison county, in that State, I paid some attention to wool-growing. The sweet pastures on the highlands near the mountains, are excellent for sheep, and the cold climate is admirably adapted to the growth of the finest wool.

My flocks ranged from full blood Merino to one-quarter Merino and three-quarters Saxony, and *vice versa.* The greatest number that I owned at any one time was five hundred, not including lambs. In one lot of one hundred acres, (including thirty-five acres of wood-land,) I pastured three hundred sheep, together with fifteen head of cattle, and four horses. In another pasture I kept one hundred and thirty, and hired the remainder kept by the year, for one dollar each. In winter, I separated them into five flocks — the lambs in one, wethers in another, and the ewes in three. I fed principally with hay, but always used some ruta bagas, English turnips, and a little corn or oats. Those that I hired kept, were fed with good hay and potatoes. I gave hay three times a day — usually dropping it on clean snow a few rods from the sheds, or barn. If sheep feed from a rack, they wear the wool from their neck, and fill their fleeces with the hay seed; if hay is given under sheds or in the yard, they tread it in the dirt, and waste it.

Open sheds are sufficient protection for flocks in winter. Confined air, and crowding in close quarters, are each highly injurious. In spring, I always had my sheep *tagged* before turning to pasture. By this practice, wool is saved, the fleece is kept clean, and the sheep in a more thriving condition. After washing thoroughly in running water, I let them run seven or eight days before shearing, that the wool might become a little softened with oil. Manufacturers like it better in that condition, and it weighs more. A flock of four or five hundred half blood Merinos usually averaged three pounds of clear wool to the clip — sometimes a little more. A flock of wethers only, average about five pounds each. Prices of wool, of that quality, ranged from forty to fifty cents; I have sold some of the finest Saxony at seventy-five cents per pound. Wethers I sold at three years of age to drovers — price, two dollars each. They are seldom fit to sell at three years, and after three years, they shear less wool. Farmers allow that seven or eight sheep require an amount of food equal to one cow. I kept ten cows, and the *labor* attending their keeping, was, every year, equal to that required by five hundred sheep.

Cows there, yield richer milk, and a much greater quantity,

than here. Many large dairies are kept in that county, and with some profit; but the profits of wool-growing were much greater. I have not time now, to give illustrations of this. Hay was worth there eight to ten dollars per ton.

In regard to sheep husbandry in this county, I can only give an opinion; let it pass for what it is worth.

I do *not* think that *wool-growing* can be generally profitable here. The price of land is too high for pasturage, the feed is not often suitable, hay costs too much, and western farmers can grow wool to an almost unlimited extent, for one-third of the cost to us, and get it to our markets almost as readily as we. *Sheep-raising*, I think, can be made profitable. The price of fat lambs in our markets, is always very high, and so also is the *extra quality of mutton.* To supply the demand for these, should be the *first* aim in sheep husbandry, here, and the *next*, to get valuable wool. Sheep of good fattening properties should be chosen. Probably some of the large kinds will be most profitable. The *weight of the carcass* is an important item, and a heavy fleece of coarse wool, if of a long, soft, and free working staple, will give better returns than a light fine fleece. The extra keeping given to sheep to fit them for market, largely increases the weight of the wool. A flock should never be fed with poor hay, early in winter, however good may be their condition. It is too expensive. They become poor, cannot bear the cold so well, and if you give them corn, then, it induces fever, and is of no benefit. With good hay, and ruta bagas, or other roots, sheep will winter in fine condition; and that is the only condition profitable. For pasturage, nearly all of the finer grasses will do. White clover is best; and the sheep manure on the land, and close feeding, will bring it in—so also will wood ashes and gypsum. Sheep bite very close to the turf, hence many infer that they injure pastures; but this is not true.

Experience has taught wool growers that no course of culture will improve a pasture more rapidly than feeding it with sheep. It may be well to remark that they will effectually destroy raspberry bushes and briers, if pastured among them in spring and summer.

In closing, I will express the opinion (not now giving my

reasons in detail,) that where young cattle can be kept in Essex county with a profit of *one per cent.*, and cows, kept for butter, yield *six per cent.*, sheep will as readily give *ten per cent.* profit.

Respectfully thine,

NATHAN PAGE.

SWINE.

The entries for premium, this year, have been more numerous than in years past,—a fine exhibition of pigs and porkers has been made in Old Essex. There was diversity of size, not to say of form and feature, and the musical sounds from the various enclosures, were of every variety of intonation, from the shrill squeal of early infancy, to the grum grunt of mature hoghood; and your committee feel that they would do marked injustice to the *swinish judgment* of the competitors for the premiums, should they speak in other than terms of praise of all the delegates from hogdom, to which they were introduced.

There were seven boars offered for premium, all of which were very fine animals, to any two of which the committee would cheerfully have awarded the prizes of the society, had not others of superior qualities, in their judgment, been offered.

The committee award to Ezra B. Welch, of Haverhill, the first premium, for the best boar, of $5 00

To Charles Rowell, of Salisbury, the second premium, of 3 00

E. Chase, of Amesbury; Josiah Crosby, of Andover; Benjamin Atkinson, of Amesbury; and F. Boyden, of Topsfield, each presented fine specimens of boars,—and your committee believe that animals of less worth have not unfrequently, heretofore, received the prizes of the society.

William H. Balch, of Topsfield, presented a boar pig of the Suffolk breed, the most beautiful animal upon the ground, and the committee regret that they do not have it in their power to award him a premium.

There were seven breeding sows offered for premiums.

William G. Lake, of Topsfield, presented three female pigs, for the prizes offered for breeding sows, but your committee, in consideration of their youth, and inexperience in the performance of matronly duties, could not seriously consider them competitors for those prizes, and they hope the young females will not take offence at this report.

William Poor, of Andover, offered a native sow, with a very fine litter of nine pigs.

The committee award to Josiah Crosby, of Andover, for the best breeding sow, the first prize, of . . . $5 00

To F. Boyden, of Topsfield, for the second best, a premium of 3 00

There were four competitors for the prizes offered for the best litter of pigs, not less than four.

James Stevens, of Andover, presented four weaned pigs, five and a half months old, which were beautiful animals.

Charles Rowell, of Salisbury, offered four weaned pigs, which, from their beauty and apparent excellence, ought to, and would, against any common competition, receive the highest prize.

Henry A. Gould, of Andover, presented four swine, which caused much trouble to the committee. The question is, at what period in the life of swine, do pighood and hoghood commence? The said swine, as your committee were informed, were born on the 31st of March last, at 4 o'clock in the afternoon. They presented, in their appearance, marks of unusual maturity for animals of the age the day of their birth would seem to indicate. Your committee finally determined that it would be improper for them to attempt to go behind the information they had received; and although these swine, from their size and appearance, seemed to have arrived at the age of mature hoghood, the committee award to Henry A. Gould, for the best litter of weaned pigs not less than four, from two to six months old, a premium of . . $6 00

To William H. Baleh, of Topsfield, for the second best, a premium of 3 00

There were several fine specimens of swine offered for show, not for premium, whose owners are entitled to the thanks of the society for the trouble they have taken to add to the interest of the exhibition.

William Swan, of Lawrence, offered a very fine boar pig.

J. C. Hoadly, of Lawrence, presented a Suffolk pig of fine form,—none better on exhibition, of his age.

Simeon Bardwell, of Andover, showed to the committee two pigs out of a litter of nineteen, five months old, of the Suffolk and Chester breed, which satisfied the committee that his breed of pigs is not often excelled.

N. W. Harmon, *Chairman.*

Stallions.

The committee on stallions report that there were four stallions offered for premium, in the name of the following persons, viz.:—

One by Seth Kimball, of Bradford, six years old; one by Josiah Crosby, of Andover, four years old; two Arabian stallions, by Joseph S. Leavitt, of Salem.

There were also presented to the notice of the committee, two splendid draught horses, weighing about fifteen hundred pounds each, belonging to the Atlantic and the Bay State Cotton Mill Company.

Also, a very fine black draught horse, weighing about thirteen hundred pounds, owned by Wilson & Allen, of Lawrence.

Upon deliberation, the committee have agreed to award to Seth Kimball, of Bradford, for his light chestnut-colored horse, the first premium, of $20 00

To Josiah Crosby, of Andover, for his dark chestnut-colored stallion, the second premium, of . . 10 00

For the committee, John Alley, 3d.

Mares.

The committee on breeding mares, report as follows:—

The number entered for premium, was six. Five only, were found in the pens. One of that number did not come within

the rule of the society, not having a foal with her. The four to which the committee gave their attention, were entered by Nathaniel Stevens and Asa A. Abbot, of Andover, Jesse Smith, of Haverhill, and Horace Ware, of Marblehead. The first three had the appearance and reputation of having been valuable animals, but all were considered unsound. The committee were unanimous in the opinion that no unsound mare should be recommended as a breeder. There was some difference of opinion in the minds of the committee, whether the blemishes in Mr. Smith's mare were such, as to materially injure her as a breeder. But after a careful examination and interchange of opinions, they decided that no one was entitled to a premium. Mr. Ware's mare was young and sound, but the committee could not discover those decidedly superior qualities in her, to entitle him to a premium.

The committee have to regret that they did not feel at liberty to award either of the premiums at their disposal.

Respectfully submitted, for the committee,

Dean Robinson, *Chairman.*

Colts.

The committee on colts, award the following premiums:—

For the best four years old colt, to Royal A. Merriam, of Topsfield, first premium, ... $6 00

For the best three years old colt, to Isaac Stevens, of Andover, first premium, ... 5 00

For the second best three years old colt, to Josiah Crosby, of Andover, second premium, . . . 3 00

For the best two years old colt, to Seth Kimball, of Bradford, first premium, ... 4 00

For the second best two years old colt, to E. C. Brooks, of Lawrence, second premium, . . . 2 00

For the best yearling-colt, to Nathaniel Stevens, of Andover, first premium, ... 3 00

For the second best yearling-colt, to J. & J. E. Foster, of Boxford, second premium, ... 1 00

The exhibition of colts was remarkably good. The num-

ber was much larger than on any of the previous years, and although the committee were unable to award any more premiums, yet there were many other colts which deserve much credit. And it is gratifying to see that the increased number and superiority which are exhibited from year to year, indicate that there is an increasing interest taken in the rearing of this favorite and valuable animal.

For the committee,

William Osborn.

Working Oxen.

The committee on working oxen report that twenty-seven pair were entered for premium, but fourteen pair appeared on the ground, the most of which did their work very well.

There were several pairs present that the committee noticed as being very fine cattle, which did not receive a premium, as the committee thought they were not so well trained as others of less marked appearance. The cattle of Franklin Alley, of Marblehead, were amongst those that the committee thought were a credit to the show, and to the owner; and Joseph Hathaway's, also of Marblehead, were remarkably fine cattle. But the twin cattle of William F. Porter, of Bradford, were the best appearing and drawing cattle on the ground, and were, in the minds of the committee, awarded the first premium; but when they tried their power in backing, the committee found that they had not been trained to it, which is a very important point, and therefore did not come up to the requirements of the society.

They award to Frederick Symonds, of Andover, a gratuity of $10 00

To J. Longfellow, of Byfield, the second premium of . 8 00

To Gayton P. Osgood, of Andover, the third premium of 6 00

To William Foster, of Andover, the fourth premium of 4 00

For the committee,

Horace Ware, Jr.

Teams of Working Oxen.

(From any Town in the County.)

The committee on teams of working oxen, report that one team only, of the description contemplated in the offer of the premium, was present at the show. This consisted of thirty-six pair of cattle from Andover. About half of these were the same that had been seen, in the ploughing and drawing. As a whole, it was a fair team, such as might readily be gathered in most towns of the county. The committee regretted that other teams had not come in from Lawrence, Methuen, Haverhill, West Newbury and Danvers, where they know fine teams could readily be collected, and where, they have reason to believe, the farmers feel an interest in advancing the purposes of the society. Without such a feeling, it is clear that premiums may as well be given for any drove of cattle that may chance to be on the road.

As this was the first instance of the offer of a premium of this class, in this county, the committee are disposed to waive the application of the rule, that requires "all objects for which premiums are given, to be of decidedly superior quality," and to reward the exertions of the farmers of Andover, who presented the team at the show, by the payment for their use of the first premium, of $20.

For the committee,

Richard P. Waters.

September 29, 1852.

Steers.

The committee have attended to the duty assigned them, and report that there were five pair of three years old steers entered for premium, (one pair of which were withdrawn, having been entered for another premium) and four pair two years old, and six pair yearlings.

On three years old steers, the committee award to James Day, of Haverhill, the first premium, . . . $7 00

To David S. Caldwell, of Byfield, the second premium, 6 00

The pair entered by Simeon Bardwell, of Andover, were very handsome, color a dark red, though considerably smaller than those to which the premiums were awarded. The committee would be very much gratified to recommend a handsome gratuity to Mr. Bardwell, had the rules of the society permitted it.

On steers two years old, the committee award:

To William Tucker, of Andover, the first premium, . $5 00
To Jacob Farnum, of Andover, the second premium, . 4 00

On yearlings the committee award:

To Gayton P. Osgood, of Andover, the first premium, 4 00

The second premium on yearlings, the committee had some difficulty in deciding, as three or four pair were so near alike, that they would have given each a premium, had it been in their power to have done so; but after much examination, they award to Joseph Kittredge, of Andover, the second premium, 3 00

James Abbot, of Andover, presented for exhibition only, several very handsome steer calves.

The committees were very much gratified to witness an increased interest among the farmers of Old Essex, in the raising of young stock, believing, as they do, that it is for their interest to do so, rather than to buy from the droves, although perhaps the first cost may be somewhat more, yet in the end they think the stock will be so much better as to pay all extra cost and trouble; thus following the advice of our first president, the venerable Timothy Pickering, who remarked, on one occasion, "Raise and improve your own stock, rather than buy from the droves, even if it should cost twice as much."

Daniel Adams, *Chairman.*

Fat Cattle.

The committee on fat cattle, report that there were four pair entered for premium.

They award to Joseph Hathaway, of Marblehead, for his best ox, the first premium, of . . . $10 00

To Edmund Barker, of Andover, for his best ox, the second premium of $8 00
To Joseph Hathaway, of Marblehead, for his second best ox, the third premium of . . . 5 00

ENOCH WOOD, *Chairman.*

BULLS.

The exhibition of bulls was very creditable to the county, and more premiums would have been awarded, if the committee had them at their disposal.

The entries were nine in number, eight for premium, and one for exhibition only.

The bull for exhibition was from Tewksbury, owned by Charles E. Abbott and H. C. Merriam, and was a noble animal.

The bull by David Nevins, the committee thought, would have been entitled to the second premium, if any one had been present to make a representation of the animal.

The committee have awarded the first premium to Eustis Kimball, of Bradford, for his native and Durham bull, three years old, ... $7 00
The second premium to Jedediah Farnham, of Andover, for his bull, 16½ months old, . . . 6 00
The third premium to William Carlton, of Andover, for his bull, half native and half Devon, . . 5 00

For the committee,

R. A. MERRIAM.

HEIFERS.

The committee on heifers report that they found for exhibition, six heifers in milk, and nineteen two years old, and yearlings. Among these the committee noticed two of good appearance, which were owned by H. C. Merriam, of the neighboring county of Middlesex. All the others, with one

exception, were entered for premium. Several of them were quite superior animals; yet among some of these the committee noticed some coarse points, indicating the necessity of more systematic care in breeding.

Your committee recommend that the society's premiums be awarded as follows:—

For heifers in milk—

The first premium to Josiah Crosby, of Andover, for his two-year old Devon and Ayrshire, ... $7 00

The second premium to Joseph Kittredge, of Andover, for his two-year old half Devon, sired by this society's Ayrshire bull, ... 6 00

No other animal of this class was considered worthy of premium, except Josiah Crosby's three-year old heifer, for which your second premium was awarded last year; and she, of course, is excluded by the rules of the society, from any other than the first premium.

For two year old heifers—

The first premium to Wm. H. Goodwin, of Marblehead, $5 00

The second, to James Stevens, of Andover, for his native red heifer, ... 4 00

The third to Isaac B. Cobb, of Methuen, for his native black heifer, ... 3 00

For yearling heifers—

The first premium to Joseph Howe, of Methuen, for his native heifer, ... 4 00

The second to J. Jones, of Methuen, for his Durham, . 3 00

The third to the town of Haverhill, for their native twins, ... 2 00

Two heifer calves also were exhibited, one five months old, of Durham blood, belonging to Thomas G. Dodge, of Newburyport; a fine animal, but evidently of forced growth. The other, owned by John Graves, of Methuen, of native stock, in commonly good condition, but of quite promising appearance.

John Keely, *Chairman.*

Josiah Crosby's Statement.

I offer for premium, my two-year old heifer, of Devon and Ayrshire blood. She calved in May, and in July her milk was

measured for one week, which averaged fourteen and one-half quarts per day, and on the following week she made seven and one-quarter lbs. of butter. She has been kept in a fair pasture, and been fed with green corn fodder, but has never had any grain, or any other extra feed.

I also offer for premium, my three-year old heifer, of Devon and Ayrshire blood. She has had two calves, the last of which she dropped in May. She has been fed like the other heifer, and was milked till within fourteen days of calving. Her milk was measured for one week, which averaged fifteen and one-half quarts per day, and in six days she made seven lbs. of butter. Respectfully,

J. Crosby.

North Andover, Sept. 29, 1852.

Joseph Kittredge's Statement.

I offer for premium, as heifers in milk, two two years old heifers; one, half Ayrshire, the other, half Devon. The Ayrshire calved about the first of May. As I had no expectation of her calving so early in the season, she was wintered the past winter on poor fodder, and was quite lean in flesh when she calved; since which time she has had nothing but pasture feed, a mile and a half from home. Her milk was weighed and measured occasionally in June, and she gave about twelve quarts a day. She is now, (27th Sept.) giving about seven quarts a day.

Had I intended earlier to offer her for premium, I would have made a more definite statement. She is a calf got by the Ayrshire bull presented to the society by the State Agricultural Society, which has been so very *severely criticised* at former exhibitions, and has been considered unworthy of the attention of the society.

The Devon calved in August, and is now giving eight quarts of milk a day. They have had no fall feed.

Respectfully,

Joseph Kittredge.

Andover, Sept. 27, 1852.

Milch Cows.

The committee on milch cows submit the following report:—

That there were six entries; five cows only came under the notice of the committee, and one of those examined had no statement of her products accompanying the entry. The committee are of opinion that better cows have been exhibited at former shows; still, many of them are considered of good quality.

The committee would remark, that the statement of the produce, in some cases, is for a short period; and in some instances the record of the produce is for former years, and not for the past season.

The cow entered in the name of Edmund Dorr, of Salem, judging from the report made of her products, may be of superior excellence, but after a thorough search among the stock, Mr. Dorr's cow was not found, nor any one to account for her.

No statement of the produce of the cow entered in the name of Isaac B. Cobb, of Methuen, came to the hands of the committee, and no one appeared, at the time of the examination, to give any information in relation to her. She was a black lined-back cow, apparently old, and exhibited signs of being a good milker.

The cow presented by James Day, of Haverhill, is reported to be seven years old, and to average sixteen quarts of milk per day during the month of June, and that there was made from her milk, from June 1st to July 10th, a period of forty days, sixty-three and a half pounds of butter, being a little more than a pound and a half per day, and requiring about ten quarts of milk to produce one pound of butter. From July 10th to September 25th, eighty-nine and a half pounds of butter was made from her milk, being about one and one-sixteenth pound per day. Up to the 15th of August she was kept in an old pasture; since that time she has been fed, morning and evening, with green corn.

Mrs. Charles H. Bigelow presents a cow, said to be ten years old. She is reported to have produced 127 lbs. 3 oz. of butter from May 21st to January 10th following, besides two quarts

of milk daily, reserved for family use. This, of course, must have been the produce of last year. No intimation is given in the statement for any portion of the time since January last. And therefore, in the opinion of the committee, this cow ought not to be considered a competitor for the premiums offered this year.

The cow presented by James Poor, of Andover, is reported eight years old, and to give milk of excellent quality. She is said to have made in 1849, in ten months, two hundred and fifty-five pounds of butter. During the months of January, February, March and April, past, there was made from her milk eighty-three pounds of butter; she had, during the winter, in addition to hay, only four bushels of shorts. We consider this an extraordinary yield, considering her feed, and also considering that she dropped her last calf in May last.

She is reported to have made, in the best of the season, ten to twelve pounds of butter per week, and to have given at that time, about twenty quarts of milk per day. If that is so, the committee do not consider her milk of superior quality, as upon that estimate it requires about fourteen quarts of her milk to produce a pound of butter.

She is reported now to give from twenty-seven to thirty pounds of milk daily. The committee regret that the statement of the amount of her produce during the summer, had not been as accurately kept as it was for the four months of the last winter and spring.

Josiah Crosby, of Andover, presented a cow three-fourths Ayrshire blood, and from his statement it appears that, during one week, she gave sixteen and one-half quarts of milk per day, and that the week following, her milk made eight and one-quarter pounds of butter.

We learn from him that this was in the month of June. She is reported to give milk up to the time of calving. She is a cow of fine appearance, and probably a valuable animal, and especially to any one keeping a single cow, as she gives milk all the year, upon hay and grass feed alone.

After a careful examination of the several animals, and the statements of their produce, the committee have agreed to award—

To James Day, of Haverhill, the second premium of, $9 00
To James Poor, of Andover, the third " " 8 00
To Josiah Crosby, of Andover, the fourth " " 7 00

MOSES NEWELL, *Chairman.*

James Day's Statement.

I offer for premium, my cow, of native breed, seven years old. She calved on the 7th of April last, and the calf was taken from her on the 15th of May. It weighed 115 lbs.

During the month of June, she gave, upon an average, sixteen quarts of milk per day. She made, from June first, to July tenth, 63½ lbs. of butter, and one week in the time she made 12¾ lbs. butter. Since that time she has made 89½ lbs. butter, up to Sept. 25th. She has been kept during the season, in an old pasture, and has had no other food of any kind, until the 15th of August; she was then fed, morning and evening, with green corn.

JAMES DAY.

HAVERHILL, Sept. 28, 1852.

James Poor's Statement.

The Fountain Cow, herewith presented, had a calf at three years old. She has never dried since. She is now eight years old. We churn every week and fortnight the year round. Her milk and butter is of a very excellent quality. She will overrun 300 lbs. of butter, annually. In 1849, we weighed her butter ten months. It weighed 255 lbs.; she then had another calf; she has had a calf every year.

This year, she made, during the month of January, 22 lbs. 6 oz.; February, 19 lbs.; March, 18¼ lbs.; April, 23½ lbs.; besides averaging a quart of milk a day in the family. Through the best of the season, 10 to 11 lbs. per week.

Her keeping is common pasturing; no fresh feed in the fall. During the winter, she had six bags of shorts.

Sept. 28, I weighed her night's milk. It weighed 16½ lbs., and measured 6 quarts 1½ pints. Average weight now, 28 to 30 lbs. per day.

JAMES POOR.

NORTH ANDOVER, Sept. 29, 1852.

Josiah Crosby's Statement.

I offer for premium, a cow raised upon my farm. She is nine years old, and is about three-quarters of Ayrshire blood. She calved in June last, and was milked up to the time of calving, without any other feed than hay. She has had no kind of grain for the last year. During the past summer she has been kept in a fair pasture, and during the severe drought was fed with corn-stalks. We measured her milk for one week, which averaged $16\frac{1}{2}$ quarts per day, and on the following week she made $8\frac{1}{4}$ lbs. of butter.

Josiah Crosby.

North Andover, Sept. 29, 1852.

Ploughing with Single Teams.

The committee on ploughing with single teams offer the following report:

There were eleven teams entered; but nine only appeared upon the field. The land was somewhat uneven in its surface, and it was more difficult to determine the comparative merits of the different teams, than it would have been upon a level surface.

The committee, after making all due allowance for the difference in the lands, award the first premium, of seven dollars, to Nathan Tapley, of Danvers, work done by Doe's plough, of Concord, N. H., in thirty-six minutes, with twenty furrows.

This plough was somewhat different in its construction, from any upon the field, and had a rolling cutter attached to it. The committee, while they would be proud of the world-wide fame which the ploughs of our own State have acquired, are glad to see a plough from New Hampshire which they think is in some respects superior to any manufactured in this State. If, upon further acquaintance, this plough sustains the favorable impression it has made to-day, we think that it will soon find its way into use among us.

The second premium, of six dollars, to John P. Foster, of Andover, work done by Ruggles, Nourse & Co.'s Eagle plough, No. $73\frac{1}{2}$, twenty-three furrows, in forty-five minutes.

The third premium of five dollars, to Daniel Carleton, of Andover, work done by Prouty & Co.'s plough, No. 33.

The fourth premium of four dollars, to Herman Phelps, of Andover, work done by Martin's plough, No. 3, in forty minutes, twenty-two furrows.

The fifth premium, of three dollars, to J. Longfellow, of Byfield, work done by Prouty plough, No. 38, forty-six minutes, twenty-four furrows; this land was neatly ploughed, except the last furrow, which was not so well turned as some others, but as the ploughman was but a boy, and did the rest of the work so well, the committee could not withhold the premium.

For the committee,

Wm. R. Putnam.

Ploughing with Double Teams.

The committee on ploughing with double teams, (Josiah Newhall, Joseph R. Bodwell, Nathaniel Peters, Daniel Adams, and Richard P. Jaques,) report: That fifteen teams were entered, which appeared on the ground, and competed for the premiums. The lots of land were drawn as follows, viz.:

No. 1, to M. J. Stevens, Andover.
" 2, to E. S. Parker, Groveland.
" 3, to Franklin Alley, Marblehead.
" 4, to David Nevins, Methuen.
" 5, to John Washburn, Swampscot.
" 6, to Charles M. Davis, Newbury.
" 7, to Furber & Reynolds, Andover.
" 8, to George A. Abbott, Andover.
" 9, to Richard S. Bray, Newbury.
" 10, to Wm. Foster Andover.
" 11, to Joseph Kittredge, Andover.
" 12, to Wm. F. Porter, Bradford.
" 13, to Jacob Farnham, Andover.
" 14, to J. L. Hubbard, Byfield.
" 15, to Moses H. Poor, West Newbury.

The teams commenced simultaneously, and the process of inverting the sod went on in a quiet and workmanlike man-

ner, and in about forty five minutes, several acres were well ploughed. The committee were pleased to observe so many citizens of the county, willing to exhibit their skill in this important part of the show.

The plough must ever be considered among the most indispensable instruments of husbandry; and the public are under obligations to the distinguished plough makers of this State, and elsewhere, for that degree of advancement towards perfection which has been attained. But the skilful use of the plough has not kept pace with the improvements of the plough itself. Many fields, smooth and without obstruction, may be seen, ploughed with furrows deviating from a right line, one or two feet on either side, with the land left uneven, and the furrows of unequal depth. But the society is doing much towards improvement in this respect, by giving examples of good ploughing.

The committee, after a careful inspection of the ploughing of the several lots, with but slight difference of opinion, awarded the premiums as follows:

The first premium, to John Washburn, of Lynn; plough, Ruggles, Nourse, Mason & Co.'s, . .	$8 00
Second premium, to Moses H. Poor, of West Newbury; plough, Martin's, ...	7 00
Third premium, to Richard S. Bray, of Newbury; plough, Prouty & Co.'s, ...	6 00
Fourth premium, to William Foster, of Andover; plough, Doe's, of Concord, ...	5 00
Fifth premium, to David Nevins, of Methuen, .	4 00

There were three double ploughs on the field, which attracted attention, but the committee did not feel it to be their duty to take them into consideration, in awarding the premiums. These ploughs were looked upon with favor by the committee, but having no practical experience with such, they forbear to express an opinion; but hope that the society will take measures to test their utility.

The committee would suggest to the trustees, the propriety of giving a gratuity of five dollars to each of the competitors with these ploughs, all of whom did their work well, viz.: to

William F. Porter, of Bradford, J. L. Hubbard, of Byfield, and one other competitor, whose name is not recollected by the committee.

For the committee,

JOSIAH NEWHALL.

PLOUGHING WITH HORSE TEAMS.

The special committee of seven, appointed to award the premiums offered by Charles A. Stetson, Esq., of New York, for the encouragement of the use of horse teams, in ploughing, report:

That there were thirteen competitors for these premiums; all of which were promptly on the ground, ready to move at the time appointed. The ground was a gravelly soil, with a fair sod, and occasional fast rocks, that required careful watching of the plough. One sixth of an acre, of like form, was assigned to each competitor, numbered from one to thirteen. Some of the lands were harder and more rocky than others. The directions were, to cut the furrows not less than seven inches deep, and of a width to be most conveniently turned flat. All started at the same time, and completed their work in from forty to fifty minutes; all having done it within reasonable time, so that the time of performance was not regarded in the award of premiums.

One of the teams was accompanied by a driver, and one of them did not plough so deep as required; these circumstances operated against their performances. Most of the teams were well disciplined, and, with the ploughmen, well prepared for the work. The struggle was fairly contested, and the work as thoroughly done, as the committee have ever witnessed. Among so many who did well, it was no easy task, to say which did best. Most of the committee were experienced in the management of teams of horses, and were practical ploughmen. Drivers were not forbidden to be used, still the committee thought, with teams properly trained, there was no necessity for their use. They noticed some of the horses were so thoroughly trained, that they would halt instantly at the

voice of the ploughmen; so when the plough struck a rock, or wavered from the furrow, it could be instantly reinstated in its proper place. With powerful horses thus trained, and well skilled ploughmen, the best of work can be done in the shortest time.

The "straight line side-hill plough," No. 83, made by Ruggles & Co., used by Moses Pettingill, of Topsfield, and held by his son, David Pettingill, all things considered, completed the work in the most satisfactory manner, and richly merited the first premium, of $25.

The work done by Ruggles & Co.'s plough, No. 73½, entered by John Washburn, of Swampscot, merited the second premium, of $15.

The work done by Doe's plough, of Concord, with Mr. Slocum's team, found much favor with the committee. Two other teams, that used No. 73, of Ruggles & Co., did their work in a manner worthy of commendation. Had the committee been so authorized, they would have cheerfully awarded the competitors twice as much, for they never saw premiums better earned.

The committee regret that any combination of circumstances should have prevented the generous donor from being present, to witness the result of the experiments that he had elicited. This is the second time the society have been under special obligation to Mr. Stetson, for his generosity in advancing the interest of their show. It only remains for a few more men of public spirit, like Mr. Fay and Mr. Stetson, to come forward with just discrimination, and liberal hand, and our farmers would show that they can do work that shall be worthy of all admiration.

For the committee,

J. W. Proctor, *Chairman.*

Dairy.

The committee on the dairy, report that four specimens of June, and nine of September butter, were submitted to their examination, which came within the society's rules for premium. No specimens of June butter, in the estimation of the committee, merited the highest premium; the second, of

eight dollars, we awarded to Jonathan Berry, of Middleton, and the third, of six dollars, to Sarah J. Stevens, of Andover.

The September butter was much superior to that of June, and the committee, after a careful examination, recommend the first premium, of ten dollars, be given to Jonathan Berry, of Middleton; the second, of eight dollars, to Caroline J. Ordway, of West Newbury; the third, of six dollars, to Nathaniel Felton, of Danvers.

So nearly equal were some of these specimens, that the committee carefully compared them before deciding their relative merits.

A specimen of four pounds of June butter, the product of one cow for two days, in June of 1850, was before the committee; which was of superior quality, and sweet and fresh; which, from the experiment in preservation, we think, entitles the maker, Mrs. Fairfield White, of Lawrence, to the notice of the society; and we recommend a gratuity of five dollars be given to her.

There were not any specimens of cheese offered.

JOSIAH LITTLE, *Chairman.*

Jonathan Berry's Statement.

I present for inspection, one pot of June butter, marked No. 1, containing twenty-three pounds, being a sample of two hundred and thirty-six pounds, the product of seven cows and one heifer, from the first of June, till the ninth of July. Also seventeen pounds of September butter, marked No. 2, a specimen of six hundred and seventy-two pounds, made from the 20th of May to the 20th of September, from the same cows. We also made from May 20th to June 20th, one hundred and eighty-eight pounds of four cheese; and from May 20th to July 15th, sold one quart of cream per week; also sold one quart of milk per day during the season, besides what has been used in the family.

PROCESS OF MAKING.—The milk is strained into tin pans, and set in a cellar prepared for that purpose. After remaining from thirty to forty-eight hours, the cream is taken off and kept in a vault until it is churned; we churn once a week; the buttermilk is worked out by hand, and the butter is salted with about one ounce of salt to a pound.

MIDDLETON, Sept. 28, 1852.

Mrs. Sarah J. Stevens's Statement.

I have one cow only, and I present a jar of butter, No. 10, made from her milk. We have used milk for our family, about a quart a day, besides making bread twice a week with milk. We have eaten what butter we wanted, besides selling over twelve dollars' worth at from twenty to twenty-five cents a pound.

The cow has had no feed except what she has obtained herself on the road, and she has had no particular care, and the latter part of the season, we were very irregular about milking. She averages about twenty pounds of milk a day.

Andover, Sept. 28, 1852.

Caroline J. Ordway's Statement.

I present for inspection one box of June butter, marked No. 7, containing eighteen pounds, a specimen of seventy-five pounds, made from the 1st of June to the 9th of July, product of two cows. Also two boxes of September butter, marked No. 8, containing ten pounds each, a specimen of sixty pounds, made from the 13th of August, to the 24th of the present month. From the 9th of July, until the 13th of August, they gave one hundred and seventy-five gallons of milk, appropriated to cheese, with other milk.

The feed of the cows has been common pasture only, until the 15th of August; since then they have been fed once a day with green corn fodder.

Process of Making.—The milk is strained into tin pans, after standing ten minutes in the pails, and placed in a cool cellar; skimmed when slightly changed, into stone jars, the whole cream being stirred as any is added. About twenty-four hours before it is churned, it is set in cold water to cool. Churn once a week. As soon as the butter is formed, it is taken out and salted, with ground rock salt, one ounce and a quarter to a pound. In twenty-four hours, it is placed on a pie board and the buttermilk rolled out; it is then weighed into pound lumps, shaped with clappers, and is fit for market.

Method of Preserving.—A layer of salt is placed in the bottom of an oaken firkin, and a linen cloth laid over it; the

butter is then put in and several thicknesses of linen cloth laid over it, covered with salt, and placed in a cool cellar.

West Newbury, Sept. 28, 1852.

Nathaniel Felton's Statement.

I present for examination, twenty pounds of September butter, marked No. 12, being a sample of seven hundred and seventy-nine pounds, made from the milk of seven cows, from the 20th of May, to the 15th of July; after that, of eight cows till the 20th of September, having used milk in the family for eight persons. The cows had common pasture till the 1st of August, and were then fed with corn fodder till the present time.

Process of Making.—The milk is strained into tin pans, and placed in a cool cellar, where it stands from thirty-six to forty-eight hours, when the cream is taken off and put into tin pails and stirred daily. We churn once a week. During the warmest weather, the cream is hung in the well about twelve hours before churning. After the butter comes, the first thing is to work out the buttermilk, which is done with the hands, without the application of any water, believing it to be of no use. We use about an ounce of the best salt to the pound, varying in some measure according to the state of the butter, to be determined by the taste of the person working it. After standing about an hour, it is worked over the second time and then weighed, each pound separately.

WEEKLY ACCOUNT OF THE BUTTER MADE.

May	27,	31½	lbs.	August	5,	42	lbs.
June	3,	45	"	"	12,	44	"
"	10,	46	"	"	19,	44	"
"	17,	42	"	"	26,	45	"
"	24,	51½	"	Sept.	2,	40	"
July	1,	51½	"	"	9,	41	"
"	8,	46	"	"	16,	39	"
"	15,	45	"	"	23,	40	"
"	22,	44½	"	"	27,	20	"
"	29,	43½	"				
						799½	"

Danvers, Sept. 28, 1852.

Mrs. Fairfield White's Statement.

This butter, No. 4, was made two years ago last June. The cream from which it was made, was gathered in two days, from the milk of one cow. It has been kept in its present state of preservation by a covering of linen cloth, dipped in lime water, and an additional thickness of flannel.

Lawrence, Sept. 28, 1852.

Agricultural Implements.

The committee on agricultural implements have attended to their duties and ask leave to report:

That two ploughs, with straight cutters, were presented for exhibition by Alfred Doe, of Concord N. H. The pattern, finish, strength, and general appearance of these ploughs compared well with other ploughs of this description. One, No. 8, was of very superior workmanship and finish. It is the same plough which attracted so much attention at the late World's Fair in London.

Three breaking up, circular cutter ploughs, were presented by the same gentleman, which your committee think are superior ploughs for lands free from rocks, and would prove uncommonly serviceable on swamp or meadow lands, where there are small roots which obstruct the common straight cutters.

The Michigan plough, exhibited by Prouty and Mears, of Boston, is a good specimen of this kind of plough. And it is well spoken of by most farmers that have used it. It is suggested by some of our best agriculturists, that an improvement can be made by widening the small, or top plough, to a corresponding width of the under, or subsoil plough, so as to make the after plough turn over the subsoil, and entirely cover up the turf.

A strong, durable hay wagon, with rigging attached, was exhibited by Cyrus K. Ordway, of West Newbury.

Daniel Stiles, of Middleton exhibited his hay and corn stalk cutter. The committee were pleased with its operation,

especially in cutting corn stalks, and some of your committee intend making trial of this cutter the coming winter, on their own farms.

For the committee,

RICHARD P. WATERS.

ROOT CROPS.

The committee report, that there were statements sent them of two crops of onions, one crop of carrots, and one of potatoes; and they have awarded the premiums as follows:

To Andrew Nichols, of Danvers, for his crop of onions, raised in Middleton, the premium of . . . $6 00

To John L. Hubbard, of Byfield, for his crop of onions, a gratuity of 4 00

To R. P. Waters, of Beverly, for his carrots, the premium of 6 00

To Charles French, of Andover, for his potatoes, the premium, of 6 00

The statements were not received until November 16th, at which time all the crops were harvested, except the carrot crop of Mr. Waters, so that your committee did not have the pleasure of viewing them in the field; but as the statements are so particular and so well vouched, they had no misgivings about making the awards.

The statement of Mr. French,—concise, but to the point,—your committee commend to the serious attention of all readers, living in the neighborhood of worthless land. He has not only received a fair income from his ground the first year, but his land is now in fine order for any other crop he may wish to put upon it.

The committee have, perhaps, rather exceeded their authority in awarding a gratuity to Mr. Hubbard, but they thought his experiment a very satisfactory one, and such an one as they did not consider advisable to let pass without "material aid" from the society.

For the committee,

J. KITTREDGE.

Andrew Nichols's Statement.

The land on which this experiment was made, is nearly level, one corner being a little elevated, and sloping towards the centre of the lot. The subsoil is sand or loose gravel, the soil a loamy mould, which, as analyzed by Dr. Dana, in 1840, contains soluble geine, 4.56 per cent., insoluble geine, 3.50; sulphates, 1.30; phosphates, .84; granite sand, 89.80. (See Socicty's Transactions, 1840.) On the larger portion of it, onions had been cultivated for one or more years. On a small portion of it eabbages grew last year. About the middle of April the ground was ploughed seven inches deep, and manured with a compost, formed by mixing twelve cart-loads of barn manure with fourteen of muck, of the same kind as that analyzed by Dr. Dana, (see Transactions, 1840,) and thoroughly harrowed, raked smooth, and one and three-fourths pound of seed sown thereon. They were weeded four times; twenty-four days labor.

Soon after the first weeding, one bushel of dry, wood ashes was sown broadcast over the whole piece. After the second weeding, one bushel of plaster of Paris was strewn over it in the same manner. After the third weeding, the western end of the piece, on a part of which cabbages grew last year, was less promising as to a crop, then elsewhere. One peck of guano, mixed with one peck of plaster of Paris, was scattered over this part of the field, about one-fourth of the whole. This apparently had the desired effect; gave the crop a luxuriant appearance, and at harvest the largest product.

Andrew Nichols.

Danvers, Nov. 6, 1852.

This certifies, that under my own supervision, Dr. Andrew Nichols, on his farm, in Middleton, experimenting on one-half acre of land, raised, on seventy square rods, from seed, three hundred and fifty-five bushels of onions; that on the remaining ten square rods, small onions, and a few seed onions were set, and a good crop of what are called rare-ripes, and seed, obtained; but as there were many of them pulled early for the market, and sold, week after week, in small bunches, it is now impossible for me to say how many bushels, or the equivalent

thereto, were produced on these ten rods, but I should estimate the value of this portion of the crop, equal to the average of the whole piece.

Luke Putnam.

Danvers, Nov. 6, 1852.

I certify that I measured the ground cultivated as above stated, and found it to contain one-half acre, and no more.

J. W. Proctor, *Surveyor.*

November 9, 1852.

John L. Hubbard's Statement.

I herewith transmit a statement of the management of the crop of onions, entered by me for premium. The land is a sandy loam, rather light on one side of the piece to a rather deep black soil on the other side, with a southern exposure, containing eighty six rods. It has been used for an onion bed several years. The manure was partly barnyard and partly slaughter-house manure, was not composted. One side of the lot was manured entirely with the slaughter-house manure, and on the other side the barnyard manure was thought to be rather too scattering, and some small heaps of the slaughter manure were put in to fill up. The manure was ploughed in, in the spring. The ground was not harrowed, but it was brushed over, and then raked by hand. The seed was then sown. One pound of the common yellow onion seed was sown first on the lightest part of the land, where the barnyard manure was put; then one pound of Danvers seed entirely on the slaughter manure, and then the lot was finished with a mixed seed of Danvers and yellow onion seed.

The seed was sown the 5th of May. The product was 127 barrels of Danvers, 125 of the common, and 47 of the mixed seed. Perhaps I ought to say that no account was made of the unripe and rotten onions, of which there were several bushels. The product was rather in favor of the mixed seed, but I attribute this to the land, as it was moister and was not molested at all with the worms. The Danvers had the next best chance, and they were ripe some days sooner than the others. There were also taken, onions for the use of two families during the summer, and 30 bunches were sold

before harvesting. In regard to measure, I say that they were measured in a basket, and that of 100 baskets, one basket was taken out, and the rest were taken to market and weighed, making 102 bushels, and 18 pounds, 57½ pounds being a bushel. If the remainder, which were barrelled, overrun at the same rate, there would have been over 340 bushels.

EXPENSE OF CROP.

Four cords manure,	$16 00	
Spreading manure and ploughing,	3 00	
Fitting the land and sowing,	1 50	
Weeding five times,	20 00	
Harvesting, topping, &c.,	12 00	
Hauling to market,	8 50	
Interest on land,	3 00	
		$64 00
Crop sold for		144 25
From which deduct cost of production,		64 00
Net profit,		$80 25

JOHN L. HUBBARD.

BYFIELD, Nov. 12, 1852.

NEWBURY, Nov. 12, 1852.—This is to certify that we, the subscribers, have measured a lot of onions for Mr. Hubbard, of three hundred and thirty bushels.

ADAMS PHALEN.
JOHN S. HILL.

Richard P. Waters's Statement.

The crop of carrots which I entered for examination, have now been harvested, and the result is as follows: From one hundred square polls of land I have taken 555 baskets of orange carrots, weighing, on an average, 56 lbs. per basket, amounting to thirty one thousand and eighty pounds of carrots, or at the rate of twenty-five tons per acre.

The mode of cultivation was as follows. We manured the land with eighteen ox-cart loads of barnyard manure, two-thirds of which was swamp muck, and one-third pure stable manure composted. This manure was spread and the land

ploughed twelve inches deep about the 20th of May. It was then raked with common hand rakes and the seed sown on the 28th of May, the rows eighteen inches apart—with one pound of orange carrot seed. The piece was hoed once and weeded by hand twice. The carrots were harvested on the first week of November, and the crop resulted as above stated. Perhaps it ought to be stated that I took a carrot crop from the same piece of land last year, and for which I received a premium. I shall continue the same crop on the same land another year. The soil is composed of dark and yellow loam, and was fenced off from an old pasture three years since.

EXPENSES OF CULTIVATION.

Interest on land,	$5 00
Six cords compost,	36 00
Spreading manure, ploughing, harrowing, raking, and sowing seed,	6 00
Seed,	1 00
Hoeing, weeding, and harvesting,	26 00
	$74 50

VALUE OF CARROTS.

Fifteen and a half tons, at $10,	$155 00	
Tops, as fodder for cows,	25 00	
		180 00
Net profit,		$105 50

In view of this result, I would ask what crop makes better returns than carrots well attended to ?

Richard P. Waters.

Cherry Hill Farm, Beverly, Nov., 1852.

Charles French's Statement.

I offer one-half of an acre of land, in potatoes, for premium. The land a bog, in a wild state, at commencement, and yielding nothing.

Cost of digging up, with spade,	$6 00
" " planting,	13 00
" " hoeing,	11 00

Cost of seed, six bushels of black, and chenango potatoes, (four bushels black, two of chenangoes,) .	$4 67
Cost of manure, (stable manure and sand,) . .	15 00
" " digging and housing potatoes, . .	10 00
	$59 67

The product was, of black potatoes, 117 bushels.
" " chenangoes, 24 "

The chenangoes were dug early, before fully grown or matured.

CHARLES FRENCH.

ANDOVER, Oct. 1852.

GRAIN CROPS.

The committee on grain crops, report, that there was one entry of wheat, only, and that by Christopher How, of Methuen, of forty bushels, raised on one acre and eighty-three rods of land, being twenty-six and a half bushels to the acre; and they award him the premium of $6.

There were two entries of rye, one by Adino Page, of Danvers, of one hundred and sixty-eight bushels, raised on four and a half acres of land, weighing fifty-eight pounds to the bushel, being thirty-seven and one-third bushels, or twenty-one hundred and one-third pounds to the acre; and they award him the premium of $6.

The other entry of rye, was by James Brown, Jr., of Danvers, of fifty-six bushels, raised on one and three-fourths acres of land, weighing sixty-three pounds to the bushel, being thirty-two bushels, or twenty hundred and sixteen pounds to the acre; and had the committee another premium at their disposal, they would cheerfully have given it to Mr. Brown, considering his extra crop, compared with the condition and value of his land.

There were also two entries of Indian corn; one by Wingate Merrill of Danvers, of eighty-seven bushels, raised on one hundred and sixty-two rods of land, being about eighty-six bushels to the acre; and they award him the premium of $6.

The other entry of corn, was by Adino Page, of Danvers, of one hundred and forty-three bushels, raised on two acres

and twenty-five rods of land, being sixty-six and three-tenths bushels to the acre; a very good crop, but a less quantity than would entitle him to the society's premium, if more than one were offered.

There was also a crop of barley entered by Isaac Smith, of Beverly, of sixty bushels, raised on one acre and forty-eight and a half rods of land, being over forty-six bushels to the acre. Mr. Smith's statement not coming up to the requirements of the society, to entitle him to a premium, the committee, considering his extra crop, recommend that a gratuity of $4 be given him. His crop of oats, which he raised on only one hundred and seven rods of land, although an extra crop, being about sixty bushels to the acre, does not entitle him to a premium, as no premiums are offered for grain crops raised on any less quantity of land than one acre.

For the committee,

Andrew Dodge.

Christopher How's Statement.

I offer for premium, forty bushels of wheat, obtained from one acre and eighty-three rods of land. It is the white flint winter wheat. The land on which it was raised, is a gravelly loam, and has been mowed four years. It was turned over in September, 1851, and thirty loads to the acre of compost manure applied, about thirty-five bushels to the load. It was sown in September, harrowed and rolled.

Christopher How.

Methuen, Nov. 8, 1852.

This certifies that I surveyed a piece of land for Christopher How, on which he raised wheat the present year, and it contained one acre and eighty-three rods.

Joseph S. How, *Surveyor.*

Methuen, Nov. 6, 1852.

Adino Page's Statement.

I offer for premium a crop of winter rye, grown on the town farm in Danvers. The field on which the rye grew, contains four and one-half acres. The soil is light and gravelly. On

two acres of this land, rye was grown last year. The other was broke up in the spring of 1850, manured in the hill, and planted with corn, yielding a good crop. In the spring of 1851 it was manured with three and one-half cords of hog-yard manure to the acre, ploughed deep, and planted with potatoes. After this crop was taken off, it was ploughed DEEP, and harrowed well. On the 22d of September, it was sown with about three pecks of rye to the acre, covered with the harrow, and rolled. On the 10th and 12th of July last, it was cut with sickles and cradles, dried in the field, and gathered into the barn in good condition, and immediately threshed out. The yield was one hundred and sixty-eight bushels, weighing fifty-eight pounds to the bushel. There was about five tons of straw, which is very nice. The collar makers and onion dealers are buying it for their uses, at sixty and seventy cents per hundred. The grain is worth ninety cents per bushel.

ADINO PAGE.

DANVERS, Sept. 15, 1852.

James Brown, Jr.'s, Statement.

I present for your notice, a statement of the culture of a field of winter rye, in Danvers, in the southerly part of the town, adjoining Boston road. The land is on a plain, light and loamy soil. In 1850 it yielded potatoes; in 1851 one-half corn, the other potatoes. About four cords of manure were then applied to the acre. No manure was applied, the present season. It was ploughed in the autumn, about seven inches deep, with one pair of cattle. Two and one-eighth bushels of seed were sown on the 1st of October, upon the lot which contains one and three-fourths acre. The produce was fifty-six bushels, weighing, on an average, one hundred and fifty-six pounds to the bag of two bushels, as plump and fair as any grain I have ever seen. No extra effort was made in the culture of the grain, but as the field was uncommonly handsome, I was induced to give this statement. Rye, in my opinion, is one of the easiest and most valuable crops to cultivate on land of this description.

JAMES BROWN, JR.

DANVERS, Sept. 25, 1852.

Wingate Merrill's Statement.

I offer for premium a crop of Indian corn, grown on one hundred and sixty-two rods of land, the soil good. It was broken up in the fall of 1850. In the spring of 1851 it was dunged in the hill, and planted with corn, and yielded about seventy bushels. In November last, I put on about four and a half cords of barn manure, and ploughed it in. In the spring it was well harrowed, and planted the 25th and 26th of May, in hills, about three and one-half feet apart. The corn was well cultivated. Weeds were not permitted to grow. It was gathered in October last, and yielded one hundred and seventy-four bushels of sound corn. I estimated the product to be eighty-seven bushels.

WINGATE MERRILL.

DANVERS, Nov. 11, 1852.

Adino Page's Statement.

I offer for premium a crop of Indian corn, grown on two acres and twenty-five rods. The soil is shallow and gravelly. In the summer of 1851 we obtained about one ton of poor hay from this land. The 1st of October following, we put on nine cords of compost manure from our hog-yard, and ploughed it in, seven inches deep. In the spring it was cross ploughed, and well pulverized with the harrow. It was planted the 18th of May, in drills, the stalks standing ten inches apart, the rows four feet apart, and running north and south — the better to admit the rays of the sun. The corn was well cultivated — weeds were not permitted in the field. It was gathered in October last, and yielded two hundred and eighty-six bushels of ears of corn. I estimate the produce to have been one hundred and forty-three bushels of corn.

ADINO PAGE.

DANVERS, Nov. 6, 1852.

Isaac Smith's Statement.

I offer for your consideration and for premium, a crop of barley, of sixty bushels, which I raised on one acre forty-eight and a half rods of land, from two and a half bushels of seed. The land was last year to cabbages, and in a common, ordinary state, and of the value of about fifty dollars per acre.

I also offer a crop of oats for your consideration, of forty bushels, raised on one hundred and seven rods of land, from two bushels of seed; the land in the same condition and of the same value, as that on which the barley grew.

Isaac Smith.

Beverly, Nov. 1, 1852.

Fruits.

The committee on fruits, report: That in looking back upon the season, it would be difficult to say how the weather could have been made better, for the general productions of the earth. There were but few cases of drought, which caused the grumblers — they who are never suited — to complain.

The season, as a whole, particularly for fruits, has never been surpassed. The display, and the interest manifested in this department of useful culture, continue to increase; the change, in substituting two days for the exhibition, worked admirably. Heretofore, everything was performed in an inconvenient, hurried, and unsatisfactory manner. The show was crowded into one day; the committees were compelled to make up their awards after partial examination, and many were often dissatisfied with their results. Now there is ample time for everything, and the merits of every contributor can be fully discussed, and correctly decided.

The exhibition of fruits, with the exception of peaches, surpassed that of any previous season. There were nine hundred and seventy-nine dishes and baskets, from eighty-five contributors.

The committee would occupy too much space in their report, were they to enumerate every variety of fruit or contributor; they will, therefore, confine themselves to a list of those to whom gratuities were awarded.

To Charles F. Putnam, of Salem, for the largest collection of fruits, a gratuity of . . .	$5 00
" Robert Manning, of Salem, ...	3 00
" Moses Pettingel, of Topsfield, . . .	3 00

To A. D. Rogers, of Salem, for the best pears, assorted, $3 00
" Andrew Lackey, of Marblehead, . . . 1 50
" Ephraim Emmerton, of Salem, . . . 1 50
" Benjamin Porter, of Danvers, . . . 1 50
" E. S. Parker, of Groveland, ... 1 00
" G. W. Gage, of Methuen, ... 1 00
" Moody Ordway, of West Newbury, . . 1 00
" J. B. Barker, of Methuen, for the finest collection of apples, ... 2 50
" E. G. Jackman, of Methuen, . . . 1 00
" William Bacheldor, of Andover, for his renovated St. Michael pears, ... 1 00
" William Poor, of Andover, ... 1 00
" Josiah Newhall, of Lynnfield, . . . 1 00
" William G. Lake, of Topsfield, for a large collection of apples and pears, ... 2 50
" J. & E. Lake, of Topsfield, ... 2 00
" J. C. Hoadly, of Lawrence, ... 50
" E. Clark, Jr., of Groveland, superior Hubbardston Nonesuch apples, ... 50
" Pamela Wood, of Andover, ... 50
" Adam Nesmith, of Beverly, ... 50
" Rufus Slocumb, of Haverhill, . . . 50
" D. Merrill, 2d, of Methuen, ... 50
" Jonas Holt, of Andover, ... 50
" J. R. Bodwell, of Methuen, ... 50
" Christopher How, of Methuen, . . . 50
" J. M. Richards, of Lawrence, for fine peaches, . 75
" Elijah Hall, of Methuen, ... 50
" S. C. Crosby, of Methuen, ... 50
" Joseph Russell, of Middleton, fine peaches, . 50
" Geo. D. Lund, of Lawrence, best ripened Isabella grapes, ... 50
" G. Perkins, of Amesbury, best Flemish Beauty pears, 50
" Joel Bowker, of Salem, ... 50
" J. Arrington, of Salem, ... 50
" Charles Ingalls, of Methuen, . . . 50
" Daniel Nevins, of Methuen, for Angouleme pears, 50
" S. A. Furbush, of Lawrence, finest green sweet apples, ... 50

To Joshua Hale, of Newburyport, for the St. Lawrence apple, ... $0 75
" A. Burnham, of Gloucester, best dish Bartlett pears, 50

The best Seedling Isabella grape, was from Alvin Moor, of Tewksbury. This being out of the limits of the county, your committee could only return their thanks to Mr. Moor for his contribution, and as it was the best Seedling Isabella shown, we have named the fruit Moor's Isabella. To the above gentleman, and to W. H. Hill, of Plaistow, who sent us fruit, our thanks are due. Most of the specimens of fruit raised in and around Lawrence, were fine; the soil being generally of a light sandy loam, is peculiarly fitted for the cultivation of the peach and grape, the high flavor of the former equalling those of New Jersey, and the earlier ripening of the Isabella grape indicates a warm soil, and one well adapted for these fruits.

Mr. Barker, of Methuen, who obtained the highest gratuity for apples, raised them on soil of the above description, and we were struck with their smooth and bright appearance, being free from blight or mildew.

The abundant supply of apples, the past season, throughout the country, particularly of the early varieties, and the difficulty of finding a ready market, has demonstrated that the caution thrown out some years since in the "reports" was not altogether premature. We then remarked that apples, ripening at the time of our finest pears and peaches, would have but a very limited sale; hence the cultivation of winter apples was recommended as the most remunerative. At a recent meeting of a neighboring society, the fruit committee recommended to farmers the general cultivation of the Gravenstein. This fine German apple would command its proper value, did it not ripen with the Bartlett, Harvard, Andrews, and other of our choicest pears and peaches. With the exception of early fall sweeting apples, which are wanted for cooking, the sale of dessert apples, ripening thus early in the fall, will be small, particularly in seasons when the pear or peach is abundant.

In the cultivation of fruit for sales, it is not good policy to run to one or two varieties, however excellent; for the local markets may be overstocked. We have a case in point, in the general cultivation of the Baldwin apple. The Danvers Win-

ter Sweet, Seaver's Sweeting, and the Aunt Hannah, now command nearly double the price of the above excellent sort. We should cultivate apples which ripen in succession throughout the season; and should avoid raising many of those that are in season at the time of our fine pears and peaches. We believe that apples are to become a more staple article for exportation, than they ever yet have been in New England. Our soil and climate are, we apprehend, better adapted for the permanent cultivation of this fruit, than the deep alluvial soils of the South and West. We find that there they are more subject to what has been denominated frozen sap blight and canker, which we think may be attributable to their deep soils, the roots running below the action of the sun and air, so necessary for the health and longevity of trees. We find here, on the contrary, apple trees in a good healthy and bearing state, that are half a century and more old.

In New England we have a more shallow soil; hence trees grow slower, the wood ripening better than upon rich, deep soils, where they are forced to grow later, the wood being succulent, the leaves remaining long upon the trees, rendering them liable to be overtaken by the winter, before the sap is sufficiently elaborated to stand a severe freezing. Hence, we believe that as Massachusetts can never be made a grazing or grain growing region, compared at all with the South and West, and as the apples here are equal, if not superior, on the whole, to those of any other section, we would recommend to the farmers of Essex county, to cultivate the best keeping varieties of good winter apples, as a source of income vastly more sure of a safe return than that of Indian corn; for while the Southerner cannot compete with us in the cultivation of the former, neither can we with him in the production of the latter.

From farther observation on the varieties of apples which, from time to time, we have seen, since we made a former report to this society, we would repeat our assertion, that a fruit, (particularly the apple,) originating on a given soil, will generally be superior in that locality or section, than in any other. We have in our mind the Newtown Pippin, Esopus Spitzenberg, Red Doctor, Pennock's Red Winter and Red Gillyflower, fruits which are considered first rate, as well they

may be, in their native habitats, but when grown upon our New England soil, are inferior to the Baldwin, Hubbardston Nonesuch, Mother, and Aunt Hannah. We say the same of the imported varieties generally, with a few exceptions, such as the Gravenstein of Germany, and the Ribston Pippin of England; the former of which does equally well with many of our native sorts, and the latter occasionally, particularly in deep and rich soils.

The following varieties of apples we would recommend for general culture.

Hubbardston Nonesuch. There is an apple cultivated somewhat extensively in Worcester county, and in some localities here, resembling externally, the Hubbardston, and supposed to be this fine fruit, which is not the true variety, but an inferior apple. It can, however, be known by the growth of the tree, as well as by the texture of the fruit. The growth of the genuine sort is straight, or upright, the shoots dark colored, very similar to the Baldwin, and nearly as good a grower in the nursery; while the spurious variety is pendant or waving in growth. The flesh of the true Hubbardston is yellow, that of the spurious, white. We cannot too highly recommend the culture of the Hubbardston Nonesuch. The fruit averages larger than the Baldwin, is in eating some three or four weeks earlier, and is more saccharine, or sweeter; hence some individuals call it sweet. It is not, however, sweet, as we denominate the Danvers Winter Sweet, or the Green Sweet of Coxe, but is a pleasant and rich table fruit—none better.

Baldwin. This well known fine winter fruit, all admit to be worthy of the extensive cultivation it receives.

The *Roxbury Russet* and *Green Sweet*, are two of the latest keeping, and most desirable apples for cultivation; they succeed well in our county.

Murphy. This seedling winter fruit originated in Salem, in this county. It resembles the Winter Blue Pearmain, in form and color, but is a much better bearer than that variety, and more deserving of cultivation It is supposed to have been produced from a seed of the Baldwin.

Danvers Winter Sweet. This is one of the best, if not the best, winter sweet apples we possess, and always commands a good price in our markets.

Rhode Island Greening. This apple is nearly as popular with many, and is almost as well known, as the Baldwin.

Large Yellow Bell Flower—Minister—Swarr. These three varieties are great bearers, and worthy of cultivation; they are late keeping sorts, but require to be gathered with care, as they bruise easily, particularly the Minister.

Jonathan, a fine winter apple of good size, highly recommended by the late Judge Buel, who cultivated it extensively.

Peck's Pleasant. This apple, ripening from November to March, has been long cultivated in Rhode Island, and there considered a first rate fruit. It resembles, in form, the Aunt Hannah; it is, however, a larger apple. The tree is a moderate grower, bears well annually, and is altogether worthy of culture.

Ribstone Pippin. This is one of the best apples in England, standing at the head of their winter varieties. It requires a deep and rich soil. We saw this fruit under culture, on the grounds of a Mr. Abbott, in South Andover, where it bore well, the fruit large and fair, the trees under good culture, and the soil was highly manured. It being the only instance in which we have witnessed the culture of this English sort, we cannot speak confidently of its success in our county.

Ladies' Sweeting. This winter fruit keeps, like the Danvers Winter Sweet, late, without shrivelling, but we cannot coincide with Mr. Downing, in its superiority over the Danvers Sweet. The small nursery trees we have thought rather tender, having suffered more with us than many others. It is, however, considered by many cultivators, an acquisition to our fine winter sweeting apples.

Aunt Hannah. This fine apple, in flavor resembling the celebrated Newtown Pippin, *as grown in Long Island and in New Jersey*, we can commend to cultivators, although of small medium size, as heretofore grown upon old trees in poor soil; yet upon young and thrifty stocks, and upon a strong and well manured land, they will grow to a good medium size. This apple is like the Newtown Pippin in form, hence a member of the Massachusetts Horticultural Society, on our first exhibiting these apples at their weekly shows, pronounced them "small specimens of that variety," also as their flavor was of the same richness. The Aunt Hannah originated in this

county; is in eating from November to February, and altogether deserving of cultivation.

Red Pumpkin Sweeting. A Connecticut seedling, introduced by Mr. Ramsdell, of Thompson, and esteemed for the large crops it bears, as well as for its saccharine flavor. The tree is a vigorous grower, with very upright shoots, and comes early into bearing, and is one of the best winter sweet apples we possess; in season, from October to February.

Large Yellow Sweet Bough. We consider this to be the best early sweet apple of our county; it is of large size, bears annually medium crops. The tree is not a great grower, but healthy and thrifty, In the eastern part of New Hampshire, this fruit is called Early Washington. Coming early in the summer, it is a saleable apple in the markets.

St. Lawrence. This is a most beautiful late fall fruit, exhibited for the first time at our last anniversary, by Joshua Hale, of Newburyport; it is a seedling apple, first raised by Henry Corse, an amateur cultivator in Montreal, and which promises to be an acquisition to our list of apples. Mr. Hale informs us that the tree, with him, is of an upright growth, similar to the Baldwin, and is a good bearer annually; it was set out in the fall of 1840, and bore the last season one and a half bushels of fine fruit. Your committee found this fruit to be in eating in November, and of a rich sub acid flavor, being an excellent dessert fruit. In its rich coloring it surpasses any apple we have ever seen, being beautifully striped with bright flashes of crimson red.

Fall Harvey. This is also a fine, large apple, of a rich flavor, but somewhat variable in quality, as occasionally it will be small and rather *scrubby.* It being, however, generally fair and handsome, we commend its culture to our farmers.

Williams' Early Red. This variety, when planted upon a warm and deep soil, with high manuring, produces a beautiful fruit, above medium size, but in a light, thin soil, it is small and indifferent. It will not *accommodate* itself, as has been said of the Baldwin, to almost every variety of soil and aspect; but under the above mode of culture it deserves a place in every garden and orchard, and will then command a greater price than any apple coming thus early in the season.

Porter. This is a Massachusetts apple, first raised by Rev.

Mr. Porter, of Sherborn. It is deservedly a great favorite as a dessert fruit, and commands a good price in the markets. The tree is very productive, the fruit rather large and oblong, ripening in September.

Haskell Sweet. Originated on the farm of Deacon Haskell, in Ipswich, (now owned by Mr. Nourse, of the firm of Ruggles, Nourse & Mason,) and on which the original stock is now standing. It is one of the best, if not the best fall sweeting. It is extensively cultivated in Western New York, and deserves to be better known in New England. By Cole it is called the Sassafras apple. It is large, and very juicy, in eating from the middle of October to the middle of November. The nursery trees are straight and good growers.

Pears.—So many varieties of this fruit have been brought forward, it is difficult to say which are, upon the whole, most desirable for general cultivation; for while many of the new Belgian and Flemish kinds succeed well, as they often do, in the sheltered and warm gardens of our cities, they canker and blast in open country exposure. The best varieties of pears, are those originated in our own country, or in the more temperate and colder latitudes of Europe. Many of the old varieties heretofore cultivated, are now displaced by better sorts. It was well, at our former shows, to bring forward those that were found, upon trial, indifferent if not worthless, in order that we should avoid working such fruits; but the time, we think, has arrived, when it is no longer necessary to exhibit at our annual shows these discarded fruits. We have also some varieties of apples which many of our farmers continue to cultivate, that ought not to be recommended for general culture. The Winter Blue Pearmain is not so desirable a fruit as the Murphy, which resembles it closely in form and color, but is a better bearer, and altogether superior for orchard culture; and the Kilham Hill is perishable in its nature, and the worst keeping apple we are acquainted with. The following pears, which have thus far done well in open culture, we would recommend in this report:

Bloodgood, early, native fruit.
Bartlett, September, foreign fruit.
Andrews, September, native fruit.

Rostiezer, early, native fruit.
Cushing, September, native fruit.
Buffum, September, native fruit.
Flemish Beauty, September, foreign fruit.
Louise Bonne de Jersey, September, foreign fruit.
Seckel, September, native fruit.
Lewis, early winter, native fruit.
Winter Nelis, winter, native fruit.
Vicar of Winkfield, winter, foreign fruit.
Black Pear of Worcester,—*Catillac*,—*Uvedale's St. Germain* or *Pound*. These three are foreign fruits, for winter cooking.

Peaches.—In the cultivation of this fruit it is not well to run to many varieties, it being better policy to cultivate a few of the hardiest and best sorts. The yellow-flesh peaches, although not the highest flavored, are those which we should recommend for market. Among these, the most desirable are the Red-Cheek Melacoton and its *seedlings;* Crawford's Early and Crawford's Late Yellow. The Red-Cheek Melacoton we have found to be most profitable, inasmuch as it ripens after the general supply of peaches is gone, and will then command a good price. We have had this fruit, with its brilliant red cheek, hanging upon the trees as late as the second or third week in October; it is also a great bearer annually. Mr. Downing says of it, "Hundreds of thousands of bushels are raised and sent to market, in this country, every year." It is also an American seedling, and if true, as said by Mr. Cole, that natives are more hardy than foreign peach trees, this will be an additional recommendation. Of Crawford's Early and Crawford's Late, we would say that no two sorts, following each other in their time of ripening, are more desirable for cultivation, in our catalogue of peaches.

Quinces.—*Orange Quince.* This is a profitable fruit for cultivation, particularly the Early Orange, or Apple Quince. Many quince trees which we see around us, are seedlings, with fruit of a green color, oblong form, and thick, leathery skin, and are hardly fit for cultivation. We should avoid raising bushes of this kind, either from seeds or cuttings. We would recommend planting from seeds or cuttings of the true variety, as seeds from this sort will most generally produce their kind;

but the surest method of obtaining them, is by engrafting. We have, however, never found any difficulty in raising at least a great proportion of fine fruited bushes, from seeds of the finest sorts. In regard to the cultivation of this fruit, we apprehend it to be a delusion to suppose that quince trees want a wet and shady position, and that they do not require manuring. On the contrary, they should be set in good loam, and the earth should be loosened deeply, or trenched by double spading, and well manured with a good compost in the drills. Shorten in the branches, (one-half of the last year's growth,) give the roots a good drenching with water *at the time of setting out*, (NOT after,) leave the soil around the stem, concave; place them ten feet apart, and the rows twelve feet; prune just after the fall of the leaf, or early in March; fork in, late in the fall, three four shovels full of fresh manure. After loosening around the trees in spring, you may then give the whole a broadcast of salt.

In this connection we would remark, that as a general compost for fruit trees, we consider nothing superior to that formed of wood ashes and peat, with an admixture of salt.

CRANBERRIES.—Your committee, upon the upland culture of the cranberry, would respectfully report:

That upon the above culture of this valuable fruit, we would premise that, in our opinion, the Essex county as well as other societies in this State, have been heretofore rather premature in their recommendation of this mode of culture. As "one swallow does not make a summer," neither will one experiment justify us in commending this method. All know that the cranberry is natural to the meadow, and although the covering with water may be injurious at the time of flowering, as well as at the time of setting its fruit, still, the flooding of the vines in winter, or the covering with litter or evergreens to protect the roots, as is practised in the upland culture, will prevent the culture of this fruit to any extent.

In order to be made remunerative, these beds or patches must be made on the meadow, or upon a springy soil. Your committee visited, this fall, Mr. Needham's fine cranberry patch in Danvers, which is upon upland, so called. We found the owner, with his man, in the process of hand-weeding, thus late in the season; and to the inquiry as regards the labor in weeding, how it would compare with the same area of straw-

berries, he replied that to keep this bed well weeded, required five times the labor. The whole process, from the first preparation of the land,—the placing of meadow or swamp mud between the rows in mid-summer, the weeding throughout the season, the necessity of covering them in winter with evergreens,—requires a vast amount of labor. In considering the above testimony, which is corroborated by S. P. Fowler, of the committee, we have arrived at the conclusion, that the upland culture could not be recommended to the farmers of this county. Your committee also found, that in Mr. Needham's mode of culture, the fruit cannot be gathered by the cranberry rakes without great injury to the vines, but that they must be hand picked.

The same objections we should not make to their cultivation on their natural habitats, as we should to the corn field, but would strongly commend the setting out and extending the area of our cranberry meadows, and also in preparing others by the same means which are now used in reclaiming them for the production of English grass. For the best manner of doing this we would refer to the former reports of the society.

For the committee,

John M. Ives.

Introduction of New Fruits.

The committee on the introduction of new fruits, report that Messrs. J. & E. Lake, of Topsfield, presented three varieties of seedling grapes, for the consideration of the committee, ripening about the middle of September. One of these varieties, bearing a small berry, is an improvement on the native grape. But the committee do not consider it as approaching that high quality, for which the society offer the premiums of twenty-five and fifty dollars, viz.: "for a variety of native or seedling grape, of decidedly superior quality, ripening in this county in the open air, by the middle of September; prolific, and suitable for the table."

The committee would suggest to persons making experiments in raising new varieties of the grape, to avail themselves of the process of the cross fertilization of the flowers of differ-

ent varieties; as for instance, the native Isabella with the Black Hamburg, or some other desirable foreign variety. Seeds thus obtained and planted, would be much more likely to produce the desired result. The person who shall produce such a grape as is contemplated, for the society's premiums, will be a public benefactor. It is hoped that experiments will continue to be made, till the object in view be obtained.

JOSIAH NEWHALL, *Chairman.*

VEGETABLES.

On entering upon the discharge of their duties, your committee found placed at their disposal a motley group of the productions of the vegetable kingdom, consisting of mammoth squashes; huge beets, carrots and onions; potatoes, cooked and uncooked; tomatoes, in varieties; cabbages, corn, &c. The delicious and choice fruits, as the apple, the pear, the peach, the plum, the grape,—the lovely and beautiful flowers of the greenhouse and the garden, of the fields, the woods, and the meadows,—had been assigned to other committees.

The display of vegetables was good, a very perceptible improvement upon that of many previous years, but yet did not attain that standard of perfection which, from the character of our county, we had a right to expect.

[The committee, after enumerating the contributions received, go on to award sundry small premiums, and then remark:—]

Your committee regret that the amount appropriated was so limited as to exclude the awarding of gratuities to others of the contributors, who were deserving of some notice in this respect. They sincerely trust that this department will receive from the trustees, another season, more encouragement than has heretofore been so sparingly bestowed.

They would also respectfully suggest to the trustees, the expediency of establishing certain premiums, to be awarded at the annual exhibition, for the best general display of vegetables, also for that of particular kinds, as of beets, squashes, or the like, and for the introduction of any new variety or

varieties, which, upon trial, shall prove worthy of general cultivation.

The society cannot appropriate a portion of its income to a more worthy object than the encouragement, among our community, more especially the agricultural portion, of a taste for the formation of kitchen gardens, commonly so called, where vegetables of all kinds can be found growing in the greatest state of perfection. These will conduce not only to the profits of the farm, and consequently to the productive wealth of the country, but to the health and happiness of all, more especially of those engaged in these pursuits. This last is the most important consideration.

Your committee cannot more appropriately close this report than by quoting the following extract from the Rev. Dr. Deane's celebrated work on Agriculture, "The New England Farmer," published more than thirty years since, and having passed through several editions.

"I consider the kitchen garden as of very considerable importance, as pot herbs, salads, and roots of various kinds are useful in housekeeping. Having plenty of them at hand, a family will not be so likely to run into the error, which is too common in this country, of eating flesh in too great a proportion for health. Farmers, as well as others, should have kitchen gardens. And they need not grudge the labor of tending them, which may be done at odd intervals of time, which may otherwise chance to be consumed in needless loitering."

To the farmers of Essex, a county containing so many cities and large towns scattered over its territory, having a population more dense than any territory of the same extent in the United States, and so large a portion of it engaged in manufacturing and other pursuits than those of agriculture; thus affording very convenient and accessible markets for the disposal of the products of the garden—these remarks are particularly deserving of their consideration.

Respectfully submitted,

Henry Wheatland, *Chairman.*

Farms.

The committee on farms report that their attention has been called to only one farm entered for premium, that of Joseph Holt, Jr., in Andover, in the South Parish. This was visited by a majority of the committee in June last, and the day was spent in viewing the improvements effected by its owner. These consist principally in removing large quantities of rocks, and placing them in deep trenches and substantial walls, and in this way reclaiming land from pasture into mowing and tillage, and fencing it in the most durable manner. This work has been done principally by Mr. Holt himself, but in the minds of the committee there were strong doubts whether the labor was so judiciously applied, as it would have been in the higher cultivation of land already fitted for the scythe and plough. It was stated, however, by Mr. Holt that the farm came into his possession by inheritance, and that from ancestral associations he had been induced to expend so much labor, in subduing ground so rough and stony.

Mr. Holt's farm is small, consisting of less than thirty acres in the homestead, and, including meadow and woodland, eighty acres in all. Its management appears to be marked by neatness, skill and industry, and doubtless it yields as good an income as similar farms, under the like management. There is a convenient cellar under the barn, but we noticed nothing peculiar in the arrangements of the buildings or the yards, or in the cultivation of the crops, from which we think any new information could be derived for the benefit of other farmers. But the pattern Mr. Holt presents of a hard-working and an economical farmer, and the improvements he has effected, considering the means at his command, entitle him to the commendation of the society, and a gratuity of $15.

Mr. Holt's land, like much that we see in the county, would be greatly benefitted by a more liberal outlay for manure, either by manufacturing it from peat, leaves and head-lands, composted with barn-manure, or by purchasing stable-manure, night-soil, ashes, or other fertilizers. In the opinion of the committee, not one farmer in ten, in the county, lays up $100 a year for the proceeds of his farm, over and above his expenses, principally for the reason that the land cultivated is not

manured so highly as it ought to be, and it consequently fails to produce remunerating crops.

As a general maxim, it may be asserted that land poorly manured impoverishes its cultivator, land moderately manured yields a moderate subsistence, whilst land that is highly manured, pays liberally for its liberal treatment. This is true not merely in regard to tillage crops, but also to grass lands and orchards, and the committee would say, cultivate only so much land as can be cultivated well, — a proposition so just that it will be assented to by nearly every farmer, and yet is practised upon by only a few. A good illustration of the benefits of high and careful culture, is furnished by the market gardeners here in our own county, who, on a few acres, raise crops of onions, cabbages and squashes, that yield them a net profit of hundreds of dollars per acre. But most of our farmers spread their manure and labor over so large a surface, that both are frittered away and nearly lost. Until more judicious economy is practised in this respect, we may expect to hear from the mass of our farmers, as we do hear, a negative response to the question, "Is farming profitable?"

In November, the committee, by invitation of the Overseers of the Poor, visited the Town Farm in Danvers. This farm, under the management of Adino Page, superintendent of the almshouse establishment there, who has often been a successful competitor for our premiums for grain crops, is conducted with good judgment and skill, and, in connection with other industrial operations carried on there, is made so productive as to reduce the cost of supporting the poor at the house, deducting outside expenses, to twenty-eight cents a week for each inmate. The soil is light and very gravelly — truly a hungry soil; and yet by deep ploughing and liberal manuring, it yields crops above the average of the best lands in the county.

Large quantities of offal are purchased at the slaughter houses in Danvers, and brought to this establishment. Here the heads and shins are boiled, — the tallow is saved for the curriers, and soap and candle makers; the neats-foot oil for the harness makers; the bones for the button manufacturers, and for other purposes; the bits of skin for the glue-makers; and the refuse of these, with the blood and entrails, are thrown into the large yard adjoining, as a rich, though not very deli-

eate, food for the one hundred or more swine, which devour all of it that is eatable, and, with a plentiful supply of meadow mud, work up the rest into the richest of food for the grain and other crops raised on the farm. Five hundred cart loads of manure are thus made here annually, and never have we seen a more thrifty and profitable set of hogs, in any enclosure. The large cellar under the barn, which is connected with the hog-yard by an underground passage-way, furnishes a dry sleeping apartment to the hogs, and the materials for increasing still further the manure heap.

From the nature of the soil here, it may be doubted whether this manure, strong as it is, produces very permanent effects. Land so light and gravelly, needs a large admixture of clay, to retain the fertilizing properties of the animal manures applied to it. If this can be obtained on the farm, or at a short distance from it, it might be carted on in the fall and winter, and laid out in heaps, so as to be pulverized by the frosts, and then srpead and ploughed in, in the spring. Clay is sometimes found on silicious soils a few feet from the surface, and by digging pits at proper intervals, where this is the case, a supply may be had, without much expense for transportation.

Mr. Page has also employed the pauper labor of the farm to advantage in reclaiming considerable tracts of low meadow lands,—portions of which are yet waiting for similar improvements,—and in draining run lands, both by surface ditches and underdrains. We noticed one thing in the practice of Mr. Page, and we understand that it is not uncommon with the farmers and gardeners of Danvers, which has attracted much attention in England, and which is there claimed as the result of recent scientific investigations, but which has here been practised for years with good effects; we allude to ploughing in manures in the fall.

The London Agricultural Gazette says that "Autumnal manuring, immediately followed and covered by the plough, is the most valvable discovery, perhaps, in its results, for which agriculture has been indebted to science." This statement is founded upon the experiments of Professor Way, "who has clearly established the fact that the soil has the peculiar property of absorbing and appropriating all those elements of manure intermixed with it, which are essential to the growth

of plants." Knowing that this subject had been examined by Levi Bartlett, of Warner, N. H., and deeming it one of importance in farm management, we addressed a letter to him requesting his views and experience respecting it, and we annex his reply, as a highly instructive document.

The committee have to reiterate the old complaint, that so few of our farmers have been willing to come forward as competitors for the liberal premiums offered by this society for farm management. They have been led to examine the Transactions, from the origin of the society, to see what sums have been awarded for these premiums, and to whom and in what years they have been awarded; and in the belief that some useful suggestions may be derived from the review, they herewith give the results of their examinations:

1821.	Isaac Dodge, Hamilton, gratuity,	$10 00
1822.	William Bartlett, Methuen, first premium,	30 00
"	James Putnam, Danvers, second "	20 00
1824.	" " " first "	30 00
"	Indian Hill Farm, W. Newbury, second do.,	25 00
1826.	Moses Newell, W. Newbury, first do.,	35 00
"	Ira P. Perley, Newbury, second do.,	30 00
"	David Gray, Andover, third do.,	25 00
"	Nath'l Pearson, W. Newbury, fourth do.,	20 00
"	Benj. T. Reed, Marblehead, fifth do.,	15 00
"	Isaac Patch, Hamilton, sixth do.,	10 00
1828.	Jacob Osgood, Andover, first do.,	35 00
"	William Thurlow, W. Newbury, second do.,	30 00
"	David Gray, Andover, third do.,	25 00
"	Daniel Putnam, Danvers, fourth do.,	20 00
"	James Pecker, Amesbury, fifth do.,	15 00
1829.	Daniel Putnam, Danvers, third do.,	24 00
"	Amos Gould, Ipswich, fourth do.,	21 00
"	Moses Little, W. Newbury, fifth do.,	18 00
"	John Adams, Andover, sixth do.,	15 00
"	James Stevens, Andover, gratuity,	12 00
1830.	Erastus Ware, Salem, first premium,	30 00
"	John Adams, Andover, fifth do.,	18 00
1831.	Jesse Curtis, Marblehead, first do.,	26 50

1831,	Matthew Hooper, Danvers, second premium,	$26 50
"	Jedediah H. Barker, Andover, gratuity,	12 00
1833.	Joseph Kittredge, Andover, second premium,	27 00
"	Thomas Chase, Rowley, first do.,	30 00
1835.	Daniel Putnam, Danvers, first do.,	30 00
1837.	Joseph How, Methuen, first do.,	30 00
"	Erastus Ware, Marblehead, second do.,	25 00
1845.	Christopher How, Methuen, first do.,	25 00
"	Daniel P. King, Danvers, second do.,	20 00
"	Jonas Holt, Andover, gratuity,	8 00
1846.	" " " second premium,	20 00
1847.	Daniel Pillsbury, W. Newbury, gratuity,	10 00
1848.	Leverett Bradley, Methuen, first premium,	25 00
"	Henry B. Newhall, Lynn, third do.,	10 00
1849.	Joseph F. Ingalls, Methuen, gratuity,	15 00
"	Jonathan Merrill, " "	10 00
"	Daniel Merrill, 2d, " "	10 00
"	Simeon L. Wilson, " "	10 00
1850.	J. F. Winkley, Amesbury, first premium,	15 00
"	Henry Poor, Andover, second do.,	10 00
1851.	William F. Porter, Bradford, first do.,	25 00
1852.	Joseph Holt, Jr., Andover, gratuity,	15 00

From this it appears that from 1821 to 1835, the first fifteen years of the society's existence, there were twenty-nine competitors, and $675 awarded for farm management, while from 1837 to 1852 there were only seventeen competitors, and $283 awarded. Of these competitors, there were in Andover, eleven; Methuen, eight; Danvers, seven; West Newbury, six; Marblehead, three; Newbury, Amesbury, and Hamilton, two each; Salem, Lynn, Ipswich, Bradford, and Rowley, one each.

It would appear too that in 1826, '27 and '28, there was a large number of competitors for these premiums. In those years there seem to have been an interest and enthusiasm elicited in these premiums, such as have not been witnessed since. These were years, when the committee had a duty to perform that required the exercise of sound judgment and discrimination, and from which they gathered much practical information to embody in their reports. But of late, so few

have been the entries of farms for premium that there has been little for the committee to do in the way of the examination and comparison of farms.

The remedy for this state of things, it is difficult for the committee to see. They have no belief that increasing the amount of premiums would call out more competitors; for in other societies, Middlesex, for example, where the amount offered is not so large as with us, there is no lack of entries of farms for premiums. A livelier interest must in some way or other be excited in these premiums, if we would draw out more competition, and derive from them the full benefits contemplated in their offer. Public spirited men, trustees, and other members of the society, who are interested in its progress, should present their farms for premium. Let a dozen or more come forward this very year; not wait till some further improvements are effected, nor wait one for another to lead off, but each make it a point of duty that he owes the society, to volunteer in the cause, and there will be a beginning of the good times coming for the committee on farms of Essex Agricultural Society. Let this be done for a few years in succession, and the diffidence or the indifference, whichever or whatever it be, that now rests, like an incubus, on our farmers in this matter, would be shaken off, and the example thus set would become contagious. We should then enter on a new era in our history, and be stimulated to devise new modes of offering premiums on farms.

Here we may say, that if attention was directed, in the examination of farms, to specific points, to be announced beforehand, competitors would be more ready and better prepared to enter their farms for examination, and the committees could make a more correct comparison between them. A scale of fourteen points might be framed, something like the following, no competitor to be allowed a premium for a farm under ten points.

Article.	Points.
1. Farm Buildings and Yards, . .	1
2. Manure and Compost heap, . .	1
3. Stock, for quality and condition, . .	1
4. Tillage crops; Indian Corn, . .	1
5. " " Potatoes, . . .	1

Article.	Points.
6. Tillage crop, Roots, . . .	1
7. Small Grain crops, . . .	1
8. Grass, on uplands, . . .	1
9. Grass, on reclaimed meadows, . .	1
10. Ditches and Underdrains, . . .	1
11. Orchards and Kitchen Gardens, . .	1
12. Stone Walls and other fences, . .	1
13. Dairy products, ...	1
14. Farm accounts, ...	1

For the committee,

ALLEN W. DODGE, *Chairman.*

Joseph Holt, Jr.'s, Statement.

The farm offered for the society's premium, is composed of the following parcels: home place, twenty-seven acres; woodland about thirty acres; pasture, (one mile and a half from home,) sixteen acres; meadow and woodland, (distant three and a half miles,) seven acres.

Twenty-three acres of the homestead, I inherited from my ancestors, together with the meadow and woodland. More than one-half of the original of the home land, I have subdued from a very rough, unproductive state; a number of acres of it have cost a hundred dollars or more per acre, before I put a seed into it. There was not a rod of good stone wall on the place, I have rebuilt the whole of it. I think the whole length of wall that I have built, is three hundred and seventy rods; a great part of it is trenched from twelve to sixteen inches deep. My land is so much affected by frost, that a wall, however heavy and well laid, will not keep in place but a few years, unless the foundation is placed below the reach of frost. I have laid an underdrain through one piece of land about fifty rods, with a ditch four feet wide and three feet deep, filled with stone, within eight inches of the surface.

The committee may think that I have made too large an outlay for a man with a small income, and no surplus capital; and I have frequently felt myself, that I might not, in my day, realize, in dollars and cents, all that I have expended in this way; still, I think it will pay in the end. I have built nothing

that has been very expensive. My house is probably more than a hundred and twenty years old. I have repaired it at a cost of a few hundred dollars; put a cellar under my barn, built an addition to the barn, and a number of small buildings.

I have usually kept, for the last eight or ten years, one horse, one yoke of oxen, from three to four cows, and some young stock.

I have made, for the last few years, from thirty to one hundred cart-loads of manure yearly. I have formerly used considerable meadow mud, but I begin to think that it does not do so well on our heavy moist land, for a compost, as soil, or something that is obtained from dry land; yet I have no doubt that it is the right thing for many kinds of land. The manner in which I have applied manure, generally, is to spread twenty loads to the acre, when I seed down with grass. I have generally seeded down in the spring, and sowed oats or barley, but sometimes have sowed my grain in the spring, and ploughed in the stubble in September and sowed grass. When my grain has a very heavy straw, and falls before it is ripe, much of the grass that has been sown in spring, is destroyed; this is especially the case with oats. My corn I have always manured in the hill, and spread all that remained after sowing my grass and grain. My crops the present year, are full middling, except the hay; in that I am cut short nearly one-half,—certainly more than one-third, on my ploughed lands. My meadow grass was an average crop. I raised one hundred bushels of corn on two and one-fourth acres of ground; one acre was grass land, ploughed the last of November, the remainder was planted with corn, the year before. The crop on the part that was turned up last fall, was nearly one-third heavier than the former, which is not common on our land. I can assign no reason for this, it being all manured alike, but I think the dry weather must have affected the old ground more sensibly. I do not recollect that my corn crop was ever injured by drought before, but a part of my field, I think, was this year. I raised seventy bushels of barley and oats on two and one-fourth acres; one acre of oats, forty bushels; one and one-fourth acres of barley, thirty bushels. My potatoes were sound, but the yield was not great. I planted one-half an

acre, and raised seventy-five bushels. I have milked, this year, four cows, and made, through June, July and August, twenty-two pounds of butter per week. My orchard is all young; most of it has just commenced bearing. I have raised this season, fifty bushels of market apples—Baldwins.

JOSEPH HOLT, Jr.

ANDOVER, Nov. 16, 1852.

Levi Bartlett's Letter.

WARNER, N. H., Dec. 3, 1852.

ALLEN W. DODGE:—Dear Sir: The experiments of Professor Way seem to throw much light upon some things connected with agriculture, that were previously rather dark, and not so easily comprehended. Still, I do not think Professor Way's experiments, *alone*, fully explain the whole phenomena of the fertility of naturally rich soils. We are, I think, equally indebted to Liebig and Dr. Krocker, for an explanation of a portion of the facts, Professor Way's experiments have proved. Liebig made the discovery of the existence of ammonia in rain water, and Dr. Krocker has, by his analysis, proved the existence of a large amount of ammonia in the soil; and Professor Way has shown the capacity of the alluminous portions of soils, for retaining—fixing, as it were,—the salts and gases, so necessary in rendering a soil fertile. Says Professor Way, this "is a very wonderful property of soil, and appears to be an express provision of nature; a power," he remarks, "is here found to reside in soils, by virtue of which, not only is rain unable to wash out of them those soluble ingredients forming a necessary condition of vegetation; but even these compounds, when introduced artificially by manures, are laid hold of and fixed in the soil, *to the absolute preclusion of any loss, either by rain or evaporation.*"

I must beg leave to be excused from *going the whole figure* with him, in the above strong assertion. Take, for illustration, a strong clay soil, that has been thoroughly underdrained, and then put upon it twenty-five loads per acre, of cattle manure from a barn cellar, spread and plough it in, let a heavy rain follow, and I think the waters running from the drains would show by their color, taste, and smell, that some of the

compounds (artificially introduced into the soil by manures) had escaped with the water and were entirely lost. Then let the sun burst out so as to cause a rapid evaporation from the soil, and would not some of the ammonia again take wing and escape into the atmosphere? I so opine; but that an aluminous soil, possesses a vastly greater capacity for retaining the fertilizing qualities of manures, than a silicious soil, there can be no doubt.

You ask the results of my practice in fall manuring. In the spring of 1847, I planted about one hundred rods of inverted sod land with corn, the soil a strong yellow loam; the manure was all applied upon the surface, and harrowed in; a fair crop of corn followed. Soon as harvested, I prepared the ground for sowing winter rye; by (a-la-mode Phinney) the use of the cultivator and harrow; rye, herdsgrass and red top were sown, (as I was residing in Boston, there was no clover seed sown in the spring as I intended to have had done.) The crop of rye was good, but the prospect for future hay crops was bad, and I concluded to plough up and plant again. I left Boston first of June, 1848, and soon after, happening into one of our stores, the owner remarked to me that he had a lot of damaged salt fish, and if I could work them up into manure, I might have them in welcome. The next day I sent my team after the fish; there were about five quintals, these were placed in alternate layers, with about five cart-loads of fresh dug muck; in a few days there was a strong smell arising from the heap; first of September shovelled over the pile and found but few traces of the fish remaining. Late in the autumn this was hauled on to the rye stubble, being about six common cart-loads, and as many more loads of manure from the barnyard, all of which was spread and ploughed in. In the spring, about a dozen loads of green winter-made manure were applied, and cross ploughed; the result was the best crop of corn I ever raised; the corn came up and went right ahead, to the end of the season.

I have since pursued the same course in using the manure that I have on hand every fall, thinking if there is a small loss either by leaching or evaporation, it is not so great as the extra expense of carting out in the fall, and piling up in trig heaps, as manure should always be, if destined to lie over

winter. But my practice till this autumn, has always been to apply the manure in the fall to loamy soil. The past season, I had an acre of land planted with potatoes; most of this field was of a sandy texture. After the potatoes were dug and the tops removed, I carted on to this acre twenty-two loads of manure, spread, and then harrowed the ground with a heavy harrow. Next spring I shall add more manure, and use the cultivator and harrow only, so as not to disturb the inverted sward, and plant with corn. There may be some loss of the manure on this sandy soil by leaching; but I do not think it will be equal to the expense of having to remove the manure next spring, as is usually practised by most farmers. If you have sandy soils, upon which you wish to apply manures in autumn, I think you would not suffer much loss in carting on fine manure, (whether it is stubble ground, or inverted soil,) and working it into the surface soil, by the harrow and cultivator. Yours truly,

LEVI BARTLETT.

FATTENING CATTLE AND SWINE.

In the absence of any statements of competitors for the premiums offered on this subject, the chairman of the committee would communicate some facts within his experience, relating to the management of cattle and swine. Our annual custom at the Town Farm, in Danvers, has been, for a number of years past, to keep four oxen for labor on the farm, for which we find constant employment; and we usually purchase those in working condition, and of a large size. They are fed with the products of the farm and Indian meal, giving them from four to six quarts of meal per day; generally the latter quantity after the first three months. Their skins are kept clean by the use, every day, of the card and brush. This I think important, and should not be neglected. Their stalls are plentifully littered with straw, or meadow hay, and thus are kept dry and comfortable. They are, and should be, driven carefully and treated kindly, and never subject to blows, kicks, nor any harsh treatment whatever. Kindness and care should ever be the motto of the teamster.

With the amount of labor that they perform under such

treatment, we generally find them, in from four to twelve months, fat. We then turn them for beef at the highest market price, and they return us from twenty to fifty dollars a pair more than their cost. We have considered this one of the most profitable ways of keeping cattle.

The management of our swine at the Town Farm has so often been stated, that I have nothing new to communicate; but as these few remarks may come to the notice of those who are not familiar with our management, I will briefly state it.

We have a yard covering about half an acre of ground, in which our swine are kept. It is so constructed as best to facilitate the making and preservation of manure. Care is taken to have a full supply of meadow mud, and other materials collected on the farm, for the operations of the swine. In this way there is annually made more than a hundred cords of valuable manure. This adds much in increasing the crops and improving the condition of the farm. We replenish our stock of swine twice a year, by purchasing usually from Brighton Market from seventy-five to eighty pigs, of about a hundred pounds weight.

Care is always taken to select the most promising from the droves there for sale. After keeping them about six months, we find them to weigh from two to three hundred pounds. Much of their feed is furnished from the offal procured from slaughter-houses in town. This offal adds essentially to the quantity and quality of the manure. Attached to the yard are sheds to protect them from the weather, and there is a convenient house fitted up with troughs for feeding them. Most of the labor in collecting the materials for manure and taking care of the swine, is performed by the inmates of the house, so that it is done without much expense. I would say that I think it important that hogs should have a place to lie where they can be free from wet or dampness, for unless they have a dry bed they will not fatten. The present year we paid seven cents per pound for pigs, the pork was sold at eight and one-half cents per pound, yielding, we consider, a fair return and a good profit.

Wingate Merrill, *Chairman.*

Danvers, Nov. 13, 1852.

Manures.

The committee on manures report that no entries for premium on that subject have been made the present year. Your committee regret that so important a subject should not have been brought to their notice by those who have made experiments on manures, so that others of less experience might have the benefit of their knowledge.

But lest the subject should pass without note or comment, I will give my own method of increasing my compost heap, though I do not expect to advance any new views.

In the first place, I cover my barnyard and cellar with peat mud and soil, to the depth of six or eight inches, and yard my cattle through the summer and fall, upon it. Late in the fall I give it another coating of mud, about the same thickness as at first, where it remains till spring. By thus managing, the liquors are all absorbed, and the droppings from the cattle become pretty well incorporated with the mud during the winter. It is true, by the above practice, I find it a little inconvenient getting about the yard at some seasons of the year; but when the yard becomes too wet and soft, I obtain, if possible, a few loads of coarse manure from the stables, and spread over it, so that the cattle may tread it into the mud.

In the spring, I have it thrown into large heaps under the sheds in the yard, (which are made almost expressly for this purpose,) and barn cellar, — where it remains a few weeks, when it is forked over, breaking the lumps fine, and making it fit for use.

I also keep a quantity of soil at a convenient distance from the sink-room, to receive the soap suds and waste water from the house. This I replenish several times during the year, and it makes a valuable manure for top dressing grass lands. By this management, I make a much larger quantity of manure than I can obtain in any other way, for the same cost.

From the little experience I have had with manure composted as above, I am confident that I get as good crops as I did when I used green manure altogether.

Lewis Allen, *Chairman.*

Danvers, Nov. 25, 1852.

Flowers.

The committee on flowers awarded the following premiums:

To G. J. Thornton, of Andover, for a magnificent cone of cut flowers. This cone was six feet in height, and five feet in diameter at the base, and was a striking and beautiful object, ... $4 00
Mr. Thornton also presented other cut flowers of much beauty.

To Mr. Flynn, gardener of C. S. Storrow, Esq., of Lawrence, for sixty specimens of Dahlias. These were exceedingly well grown, and beautiful flowers, . 3 00

To John Hart, for forty Dahlias; twelve Fuschias in pots, and in full bloom; Balsams in plates, and other flowers, from garden of Gen. H. K. Oliver, of Lawrence, ... 3 00

The above constituted nearly the whole of the floral exhibition of the fair. The committee regret that so limited a show was made, but at the same time feel the justice of awarding much praise for the beauty and perfectness of the flowers shown, especially of the Dahlias. * * * *

Henry K. Oliver, *Chairman.*

The committee on essays, Gardner B. Perry, chairman, awarded the premium of ten dollars to David Choate, of Essex, for the following

Essay on Sheep Husbandry.

It does not necessarily follow, that the writer of an essay on a given subject, should advocate changes and innovations in regard to it. As much good service is often rendered by advising people to "let well enough alone," as in any other way. *Speculations* are sometimes synonymous with *losses*, and were not farmers generally amongst the last to be convinced of the utility of change, it might be positively injurious to argue in favor of new or modified methods of husbandry. It is not the object of this essay professedly to advise the farmers of Essex

county to go largely into wool-growing, and yet if it should clearly follow, from this humble effort, that something further should be attempted in the matter of keeping sheep, by a moderate expenditure, annually increased for a few years, until the experiment should be fairly tried, it will not surely be cause of regret.

Various causes concur, to make it difficult to suggest any rule, which will apply to all parts of even the county of Essex. Land in the neighborhood of market towns is too valuable for keeping sheep. This is well understood by farmers. Even in Amesbury, although there were twenty-seven sets of woolen machinery in that town in 1837, there were but four hundred and ninety-eight sheep kept, for the reason, no doubt, that the milk of the cow at Newburyport market, would pay better. The town of Beverly had but one hundred sheep in 1837, being within a mile of Salem, and Danvers only fifty, while Boxford had four hundred and eighty-four.

And again, some kinds of sheep require more expensive keeping than others do. So, also, much depends upon the leading object for which sheep are intended to be kept— whether for the wool or the carcass — and again, whether for fine or for coarse wool.

It will be safe, in general, however, to lay down the broad principle, that Essex county is not the place for extensive wool-growing. Mr. Jewett, an American wool-grower, has recently imported French sheep, which shear twenty-one pounds each, at an outlay of some $30,000, but that is in Northern Vermont, and there, sheep may be pastured at two to three shillings each, while ninety cents each is as low as it can be done for in our county.

Still, when it is recollected that in 1845 there were sixteen woolen mills in this county, with one hundred and three sets of machinery, working up two million two hundred and ninety-two thousand five hundred pounds of wool annually, and that there should have actually been but fifteen thousand six hundred and thirty-eight pounds of wool grown, we are struck with the fact, that contiguity to the market is not always sufficient to produce the supply for that market. And although a "free trade" interchange of products is sometimes the best of economy, yet there is a favorite theory lingering in most New

England minds, that *you should never buy what you can raise*, or conversely, *raise everything you want, if it will grow.* It does not follow because a family have fifty pounds of wool, that they should therefore manufacture it into cloth. The mills may do this cheaper and better.

Before discussing the question whether sheep husbandry should have a larger share of attention in Essex county, on account of the wool, I wish to remark that there is one case at least, in which it would be a good investment to keep sheep, without regard to either the wool or flesh. It is where pastures are bushy and shrubby. No common vegetable will stand before a flock of sheep kept sufficiently short.* The thousands of acres of pasture land, so full of blackberry vines, blueberry bushes, whortleberry bushes, and what not, defying the cow, and sometimes crowding her out entirely, may be subdued in a few short years by overstocking with sheep. The sheep need not be made poor by it, where it is convenient to fence off a portion at a time. Put twenty sheep on to a four acre lot for a month, and then on to another such lot; then back, and so on, alternately for six months. In three years, all biennials will disappear, if the leaf be taken off as fast as it grows. If the sheep come to the barn poor, a gill of corn a day, with common keep, will bring them up by spring. That sheep are dealt with somewhat severely, I do not deny; it is the price we must pay for the benefit of the pasture. Where the only object is to destroy weeds and bushes and prepare the pasture for the cow, a low priced sheep may be employed, and after the object is accomplished, the sheep may be fattened or sold as store sheep. But the improved appearance of the pasture is not all. The sheep enriches land beyond any other animal; its manure being stronger and more stimulating.

The popular objection may be, that the close feeding necessary for accomplishing the object, would drive the sheep over common fences. This may be; but walls can be polled, and sheep fettered, a thing often necessary to be done, even where the food is good. Some pastures have the Canada thistle, and sheep suffer from this exceedingly. I have known them made sore with festers over the body, arising from the thistle work-

* Sheep will feed, says a naturalist, upon 400 different vegetables, which no other animal but the goat will do.

ing itself through the wool, till it reaches the flesh and then into the flesh. They must then lose flesh from the irritation. If such pastures could be overstocked, however, with sheep, the thistle would be overcome, and exterminated easily, and where land is rocky, it is the only way in which they can be.

Sheep with Cows.

It was the declared opinion of the late lamented Asa T. Newhall, that in every pasture stocked with cows, as many sheep as there are now cows may be added to the number of cows without detriment. The sheep bites closer, and in many places where the cow cannot. Besides this, the sheep will feed on the leaves of vines and bushes which the cow rarely touches. Here there is an opportunity for raising the stocking yarn and mitten yarn for the family without feeling it. And no farmer who has tried the yarn of the shops, chopped off by machinery, can but desire the stockings and mittens for himself and his sons, made of yarn, carded, spun, and knit at home, or at least by hand.

Where but few sheep are to be kept, and those with cows, it is desirable to have cossets. Lambs for this purpose may be bought cheap out of every large flock, in the spring, which the dams will not own. Even cossets, however, will stray away from the cows, if there are many of them, and form a flock by themselves.*

The Kind of Sheep for our County.

As sheep cannot, probably, be profitable here for the wool alone, on account of the price of land, it is important that that kind should be selected which is best for meat, or for meat and wool combined. The Leicester sheep is one of the largest, and fattens well. The wool is also in its favor, being long and soft, and the fleece heavy, and will sell as quick at the factory as the Merino, if not quite as high. The truth is, our country

* I purchased a fine cosset three years ago, and in the fall, a buck from a flock. The cosset kept with the cows, and so compelled the ram to do for company. A ewe from a flock was afterwards added, and even then the cosset could not be induced to leave the cows, and the three kept together. Next summer, however, when they were sent to a distance for pasture, and a flock of sheep were in the adjoining pasture, mine left the cattle and joined them.

imports more coarse wool than fine. The attention of wool-growers has been directed chiefly to the culture of *fine wool;* and although we have, after all, comparatively but little of the very finest, we have almost as little of the wool suitable for carpeting. Hence it follows, that our wool intended for sale, should be of the coarse kinds, and these we find upon the Leicester sheep. A modified quality may be obtained for common family use by a mixture with the South Down; indeed some extensive wool-growers prefer this for every reason.

The pure Leicesters shear from six to eight pounds a year, and will always sell at the carpet mills.

Future Sheep Husbandry in our County.

As wool must be in some demand, and good mutton and lamb in probably great demand, I look forward to a large increase of sheep, as an event not very distant. By the returns of the marshals, as they were published in the Statistical Tables for 1845, there were at that time but four thousand eight hundred and ninety-two sheep in the county,* yielding fourteen thousand three hundred and fourty-two pounds of wool. In the same year, there were twenty-one thousand one hundred and sixty-six neat cattle kept in the county. Now if the sober judgment of the late Mr. Newhall, before quoted, was correct, there might have been as many sheep pastured, as that number of neat cattle, without injury to them, viz., twenty-one thousand one hundred and sixty-six, instead of the four thousand eight hundred and ninety-two actually kept, and yielding sixty thousand pounds of wool. At thirty-five cents per pound, this wool would have been worth $21,000, instead of $5,019, the actual value. I have proceeded thus far upon the supposition that there should be no reduction in the number of neat cattle kept. But is it clear that the keeping of neat cattle is always at the greatest profit? Let us compare the keeping of cows and sheep, for a moment.

A given pasture will carry ten cows. These cows may on an average yield six pounds of butter a week, for six months, without meal or other extra keep. At twenty-three cents per pound this will, for the ten cows, amount in six months to

* In 1837, the number was 5,837, showing a decrease of 945 in eight years.

$358. Ten calves, at $4 50 each, amount to $45, the whole making $403. Estimate the expense of a dairy woman, including board, at two and a half dollars per week, or $65 for the season, and the expense of milking and driving the cows, at the same rate per week, being $65 more for the season. Deduct these expenses, from the value of the butter and veal, and we have $273 for the net income of the cows.

Now for the sheep. The same pasture, by the usual mode of reckoning, will carry fifty sheep. They will yield three pounds of wool each. At thirty-five cents per pound, this will amount to $52 50. I estimate the number of lambs to be seventy. These at $2 50 each, are worth $175. The wool and lambs are consequently worth $227 50. The next item to be considered, is the gain of the flock by fattening. The sheep must be supposed to have the same advantage from fall feed that cows usually do. The flock will then be fit for the butcher in autumn. I will only suppose two fat sheep to be worth three store sheep. The flock of fifty now becomes seventy-five. We now have the positive gain of twenty-five fat sheep. At $2 50 each, these are worth $62 50.

The account now stands thus:

Income of the sheep, . . .	$290 00
Income of the cows, . . .	273 00
Balance in favor of sheep, . . .	$17 00

I have reckoned the lambs at $2 50 each, only. Take the price offered to Dr. Kittredge, for his lambs this year, viz., four dollars each, for a standard, and how rapidly does the balance increase, in favor of sheep.*

Objections on account of Climate considered.

The advocates of Southern sheep husbandry, triumph in the idea, that a climate like theirs, allowing sheep to run at large through the winter,† is the only one where sheep can be raised to advantage. But is there no substitute for a Southern cli-

* I might have allowed cows to average more butter, and calves to be worth more, and still leave a balance for the sheep.

† See the "Plough, Loom and Anvil," for Jan. 1851.

mate? "The great subject of shelter," says Ex-Gov. Everett, "has not been enough considered. Whenever you cut down a large piece of woodland, you change the climate of the tract of land which was shielded by it. When you clothe the summit of a hill with a thriving plantation, you make a milder climate for the slope. In short, if any one doubts the extent to which climate consists in shelter, let him remark the difference between the north and south side of a high compact wall, when the snow is going off in the spring; you will have a little glacier on the north side of the wall, and dandelions in blossom on the other."

Shelter for Sheep, during five months of the year, will give the climate they need, even here. But the sheds should be impervious to rain. A tight roof is far more necessary than enclosed sides. A cold rain kills more sheep and lambs than any degree of dry cold.* Almost the whole expense of shedding should be laid out in the roof. The sides indeed should be such that the sheep may be kept in, but except on the north and east sides, the work should be such as will admit the sun freely.

Sheep need to leave the sheds and yards occasionally for browsing and grazing, but after winter really sets in, this should be done seldom. When the ground is bare, they will find enough to keep them picking without satisfying them, and yet enough to take away the appetite for hay. Such feed as the sheep find at large, proves laxative to them, and accordingly useful occasionally, but if followed, produces a diarrhœa which is stopped with difficulty.

Mutton—a Substitute for Beef.

It is remarkable, that while in England, mutton is the dish on all fashionable tables, in our country, there is a general abhorrence of everything *sheepish*. American gentlemen, however, having once tasted the article as it is served up in London, rarely fail to order a saddle of it by the next steamer, after leaving for home themselves. I have seen recent mention of a quarter of an English Leicester, weighing sixty-five pounds,

* Even in the climate of Ohio, "thousands of sheep died for want of protection from cold rains in the early part of Winter." See the Wool-Grower, published at Buffalo.

for sale in the Philadelphia market. We have yet to learn that mutton, like poultry, should be eaten (so says John Bull) before it is dead cold, and while it has the tenderness of life, or it should be kept "until the fibre begins to give way in the incipient stage of decay." "In summer," John continues, "mutton should be kept in ice a week, and in winter should not be cooked under two or three weeks."

No evidence is now required to satisfy the most sceptical, that our country is capable of producing animals equal in size to anything in the old world. And in this connection, it may be stated that Mr. P. A. Brown, of Philadelphia, by a most ingenious instrument of his own contrivance, has demonstrated that as fine wool has been grown in five different States of our country, as the finest ever brought from Saxony by Mr. Fleichman, except a single one, and he has one American specimen finer even than that. It may also be stated, on the same authority (Mr. Brown's), for the encouragement of those who wish to be successful in sheep husbandry, that "*fine wool and fine mutton go together.*" "Sheep," he continues, "which produce fine wool, are finer and better in the meat, than those of coarse fleeces." I do not, however, conceive this circumstance to be material to the Essex county wool-grower. The largest sheep, and those calculated for the meat market, should be sought chiefly. At the same time, it is an undisputed fact that coarse, long wool, for carpeting, is in greater demand at the mills than fine wool, and more of it is imported than of fine, and this accordingly affords an additional reason for preferring the Leicester breed.

Old and Sickly Sheep need Care.

When sheep, which are peculiarly valuable and expensive, grow sick, they must have an apartment by themselves; so, also, should those that are very old, when they are too valuable to lose. They want better feed, warmer shelter, and close attention. There should be such a hospital in every establishment of fifty sheep, or even thirty. The well and strong sheep will overcome and kill them, if left together.

Large flocks should be divided in the sheds. The fewer that huddle together, the better, even on account of the atmos-

phere of the sheds or pens. But the strong ones will rob the weak; and at yeaning time, the most serious consequences would follow the promiscuous herding of a large flock.

Number of Sheep in Essex County, compared with those in the State, and elsewhere.

The whole number of sheep in Massachusetts, as returned by the marshals, in 1845, (see statistics, p. 377,) is three hundred and fifty-four thousand nine hundred and forty-three. If the five millions two hundred and sixty-seven thousand acres in Massachusetts be supposed to be fed by sheep, there would be fifteen acres for each sheep. In Maryland, there are twenty-seven acres to every sheep, and in Vermont, but three. But in Essex county, there are two hundred and fifty-six thousand acres. This will give fifty-two acres to each sheep in the county.

And yet, of the five hundred and fourteen sets of woolen machinery in Massachusetts, in 1845, one hundred and three of them are in this county. Here, then, with facilities for manufacturing, out of all proportion to other parts of the State, we grow less of the material to be manufactured, than the average of the State! And in another point of view, it would seem that the shrewd farmers of old Essex have adopted a policy which requires *more severe manual labor*, than would be necessary, were more of our land pastured with sheep. It is this—that Essex cultivates and produces as much Indian corn as Berkshire, although there are three hundred and fifty-three thousand acres more in the latter county, than in ours; showing, that although a hoed crop is the most expensive that can be raised, yet for some reason, (I think a mistaken one,) it is preferred to the easy mode of husbandry in old Berkshire.

Land improves by being Stocked with Sheep.

Even the *winter* manure of sheep, is richer than that of any animal, hogs and poultry excepted; and in summer it becomes much more so, in effect, by reason of the manner in which it is deposited. The excrements of the cow and horse, lose most of their fertilizing properties in the pasture, by their exposure to the sun and wind. The manure of sheep is deposited in rounded pellets, which are concealed from the sun by the grass

and weeds, and it easily combines with the soil, while that of the cow is about useless, unless spread by hand, a thing rarely done in pastures. The instincts of the sheep also lead it to seek the highest elevations, in warm weather, for night quarters, — the consequence of which is, that the dry and barren spots become highly fertilized.

But it is the lighter kinds of soil that receive most advantage from the manure of sheep. I insert a few extracts from a report by a committee of the House of Lords, on the subject of the wool trade, in 1828, for which I am indebted to Randall's excellent treatise on Sheep Husbandry in the South. In answer to the committee's inquiries, the following information was obtained:

"Mr. John Ellman, Jr., Sussex. I do not consider it possible for the light lands upon the Downs to be kept in cultivation, without flocks. I could not keep the farm I now hold, without sheep. On the South Downs the wool must be grown, let the price be what it will."

"Mr. Francis Hale, Altringham, Suffolk. The description of land I occupy, could not be kept in cultivation, without sheep."

"Mr. Henry King, Chilmark, Wiltshire. The size of my farm is four thousand acres. I clip annually, about six thousand five hundred South Down sheep. Such lands as I occupy, cannot be kept in cultivation without the aid of sheep."

"Lord Napier. If we had not sheep upon our lands, (the highlands of Scotland,) they would become the habitation of foxes and snipes, and return to waste."

"C. C. Weston, Esq. It is utterly impossible that the Down districts can be cultivated to advantage without sheep. We never fold our Merino or other sheep; the land is too wet." P. 71.

These facts show that sheep do enrich the land, whether it be the "dank or the dry."

Loss of Sheep by Sickness and other causes is trifling.

It is believed that two per cent. will cover all losses by sickness. And we have a great advantage over the south and west in regard to dogs. Sportsmen hold them so indispensable there, that legislators are indulgent, and pass few laws against

them. In short, however, whether the sheep dies or is killed, it has been well remarked, it never dies *insolvent.* The wool will cover all the animal costs for rearing and feeding.

Washing Sheep.

This operation is usually performed about a week before shearing. It is a severe one to the animal, and attended with much labor and some danger to the operator. Sheep often take a chill which they do not survive. If followed by cold, wet weather, the consequences cannot but be bad. Cannot the washing be dispensed with? I believe it can. The experiment has been made, to wash the wool after shearing, and spare the sheep. The fleece need not be greatly broken; and humanity certainly requires that a perfect substitute for so unnatural an operation would be found in the way just intimated.

Diseases of Sheep.

An essay upon sheep would be imperfect, without something upon their disorders. The flocks in Europe are often devastated by fevers, both malignant, inflammatory, and typhus; but they are scarcely known in the United States.

The same remark applies, says Randall, to inflammation of the brain, (phrenitis,) of the stomach, (gastritis,) of the bowels, (enteretis,) bladder, (cystitis,) &c.

Opthalmia, (inflammation of the eye,) is not uncommon in the United States. Mr. Grove recommended blowing pulverized red chalk into the inflamed eye, and some throw in tobacco juice! Mr. Randall was of opinion that pain was diminished by bathing with tepid water; and also a weak solution of the sulphate of zinc combined with tincture of opium.

Pneumonia, or inflammation of the lungs, does sometimes occur. The sheep grows dull, loses its appetite and cud, or at least ceases to chew it; the pulse is at first hard and rapid. This disease occurs after exposure to sudden cold. Mr. Spooner recommends early and copious bleeding, repeated every few hours, if necessary; and a purge of two ounces Epsom salts, which may be repeated in smaller doses, if the

bowels are not sufficiently relaxed. But great caution is to be observed, lest the animal become too much exhausted.

As many of the internal organs of the sheep resemble the corresponding organs in the human species, so many of the diseases are almost identical. Accordingly bronchitis and catarrh, assail the sheep as well as man. And, as with man, so and much more so, among sheep, is *prevention better than cure.* Too much cannot be said in favor of good, comfortable and well ventilated shelter, as a preventive of nine-tenths of all the maladies of the sheep.

Like neat cattle, sheep will sometimes have the hove (so called,) when put into clover pastures. The stomach becomes distended with wind, and without relief the animal will die. The usual remedy is to make an incision with a sharp pointed knife between the hip and the short ribs, and put in a short tube, through which the gas passes off. The wound heals easily.

Diarrhœa is often troublesome, both to sheep and lambs. If it does not yield to suitable food, such as oats, crusts of wheat bread, rice boiled in milk; a dose of castor oil or powdered rhubarb, may be given,—after which, as in the human species, the diet should be light, and sometimes a tonic of brandy, in case of great prostration, is to be recommended.

Some of the old writers upon sheep husbandry insist, that sheep are subject to *small pox.* Thus Nicholson, author of the Farmer's Assistant, enumerates this as a disease of sheep, "being," says he, "blisters which first appear on the flanks, and spread over the whole body. It is produced by drinking stagnant water. When the blisters break, anoint them with sweet oil." It cannot be supposed, of course, however, that the disease known by that name, among men, is the same as that described by him as originating in "stagnant water."

De Castro says the Spanish sheep are subject to *jaundice*—the flesh and bones turning yellow. He recommends a small quantity of the flax-leaved daphne guidium. In Great Britain, sheep are subject to a disease called the rot—it is a disease of the liver, and is not known among us; and another disease, called *red water*, is common in England, also unknown among us, or of rare occurrence.

I do not claim to have enumerated all the disorders to which

sheep are subject; but it is believed there is little to fear on account of disease in any of its forms, as a general thing.

Neither do I claim to have set forth all the reasons which can be given why sheep husbandry should have a greater share of the farmer's favor. I should deprecate a sheep fever like that in the time of the last war with England, when fortunes were ruined in a day. But we may be, and probably are, upon the other extreme. One sheep upon every 52 acres only! at the same time that more than 100 sets of woolen machinery are within three hours' ride for every man in the county! 15,000 pounds of wool only, grown in Essex, while 2,292,500 pounds are manufactured! 4,467 sheep only, in a county where there are 2,650,000 yards of flannel and blanketing manufactured, together with 700,000 yards of woolen cloth, not specified, and 100,000 pounds of woolen yarn spun, none of which is made into cloth!*

But there is much reason to believe that the day is not distant, when public attention shall be turned to this subject; and that, avoiding the sheep fever of 1812, and the poultry fever of a later day, we shall see the sober thought of our county adding a few thousand a year, till there shall be some 20,000 to 30,000 sheep within our borders, a thing which can be done without any change that would be thought, for a moment, violent.

* See Hayward's Gazetteer of Massachusetts, for 1845.

MIDDLESEX AGRICULTURAL SOCIETY.

The Fifty-eighth Annual Festival of the yeomanry of Middlesex was held at Concord, on Wednesday, October 6th. The day was favorable, and everything conspired to render the occasion attractive and successful. The exhibition in all its departments, was the largest and finest which the society, (the oldest county society in the Commonwealth,) has ever made; and in some of them it has never been surpassed in the State, or perhaps in the country.

The various exercises were such as to occupy fully, and even to crowd the hours which a single day could furnish; but the arrangements were so carefully made, and so exactly executed, that everything was accomplished without confusion or delay. Much trouble frequently arises at cattle shows, as on other public occasions, from want of punctuality—an hour lost in the morning, or even a half hour, cannot be recovered through the entire day.—Much credit is due to the chief marshal, Col. W. E. Faulkner, of Acton, for his thoroughness and efficiency in this particular. So far as it depended upon him, everything took place at the time appointed for it, and was seasonably arranged and provided for. The entries of stock, and of fruit, vegetables, and manufactured articles, were made on the day previous in a much greater proportion than in former years; which gave more time for their arrangement, and relieved the officers of the society from much unnecessary and uncomfortable pressure. By the thoughtfulness and good sense of the contributors, some part of the advantages, of taking two days for the exhibition, were thus secured; and it is to be hoped that the rules of the society may effectually provide a like security hereafter.

Farms, &c.

The committee on farms, reclaimed meadows, and fruit orchards, report as follows:

Four farms, six reclaimed meadows, eight apple, two pear, and one peach, orchards, were entered for examination. These your committee have viewed carefully, and they feel themselves authorized to make the following remarks. We have seen enough to satisfy us, not only that "the schoolmaster is abroad," but also that he is directing public attention, to the all-important subject of agriculture. An interest in this subject, amounting almost to enthusiasm, is awakened in many quarters; and its effects are already showing themselves in the improved appearances and increased products of the farm and the orchard. "A thing well begun," it is often said, "is half finished." If this be true, and we do not doubt it, then many a hitherto unproductive field will soon repay with smiles, and also, with a more substantial recompense, the labors of its owner.

Your committee visited, first, the farm of Mr. L. H. Hildreth, of Westford. Mr. Hildreth's statement (confirmed by what we ourselves saw,) indicates great results accomplished by slender means, excepting such as are furnished by intelligence and industry. His farm, by nature rather a rough and unpromising subject, is rapidly assuming a new face, its wrinkles being smoothed, and, if we may judge from the improved character of his fruit, changing from the sour and repulsive to the sweet and attractive. We cannot say whether Mr. Hildreth's preparation for his labors illustrate the "pursuit of knowledge under difficulties," but we venture to affirm, that he has found sufficient difficulties in the way of the application of it. We commend his statement to notice, because it shows how much may be accomplished by energy and perseverance.

The farm of Mr. Joseph D. Brown, of Concord, claims particular attention for several reasons. It greatly exceeds, in territorial extent, what is commonly regarded, among us, as a full sized farm. But large as it is, no part of it wears the appearance of neglect or mismanagement. We regret that a written statement was not furnished by Mr. Brown in season

for us to incorporate a portion of it with this report. We must therefore speak in general terms of his cornfield, exceeding twenty acres, of his broad reclaimed meadows, of his ploughed bogs, with their immensely broad furrows, seemingly the work of a team of elephants; of his almost interminable lines of drains, open and covered; of his stone walls, his beautiful orchard; his barns and barn cellars, all betokening a head to plan and a hand to execute, the most bold and intricate agricultural works. In the manner of carrying on his farm, Mr. Brown would be, in most respects, a safe model. Systematically, thoroughly, quietly; these seem to be the talismanic words. In one particular, however, we must take the liberty to advise an improvement, and that is, the keeping of an exact written account of the expenditures and proceeds of the farm. To Mr. Brown it may be attended with no special danger to neglect this; but to most men it would be a fatal oversight. Much as we reverence the human intellect, we doubt whether "one small head" should be required to "carry" all the complicate accounts of a large farm.

In regard to reclaimed meadows, your committee would remark, that what has passed under their observation, authorizes them to say, that with the experiments in reclaiming swamps, began a new era in agriculture. Lands, regarded as comparatively worthless ever since the settlement of the country, are now found to be of the very highest value. Though the labor and expense of reclaiming these tracts may at first appear formidable and discouraging, still it has invariably been found, that no outlay has proved a better investment, and no labor been better rewarded. When we consider what has already been accomplished in this way, and what immense tracts of unreclaimed meadow still invite the efforts of the farmer, we feel that there are among us unwrought mines, which will by and by prove more productive than those of California.

The Middlesex Agricultural Society, in offering a premium for the best conducted experiment on swamp meadow land, annexed the condition that the experiment should extend over a period of three years. This condition excludes, for the present, several applicants whose lands we have visited. Of them, as well as the others, we can speak in terms of approbation.

With or without a premium, we can conceive of *his* feeling himself abundantly recompensed, who can stand upon what was once a quaking bog, or an impenetrable swamp, and see the surface of the earth covered with sweet grasses, and enamelled with flowers. It is no figure of speech when we say of such a man, that flowers spring up beneath his feet. The experiment of John F. Rice, of Marlboro', evinced much skill and perseverance. His plans are still in progress, and we have no doubt when accomplished, they will prove alike praiseworthy and profitable. Wm. Brown, of Concord, has brought his experiments more nearly to a successful termination. His drains have been distributed with excellent judgment, and his meadows are now repaying him an hundred fold the care bestowed upon them.

In regard to apple orchards, your committee have a word of caution as well as of praise to utter. To most farmers the training of fruit trees, is a matter even less understood than the scientific management of a farm. But while an error in farming may be corrected at any time, a mistake in the early stages of the growth of an orchard cannot, perhaps, ever be corrected. The oft quoted line of the poet, "Just as the twig is bent, the tree 's inclined," is better understood of education, than of orchard growing. Your committee have visited orchards of which great care had evidently been taken, so far as keeping the earth in good order was concerned. The growth of new wood was rapid and healthy; but it seemed to have escaped the notice of the owner, that great care was requisite to shape the head of the tree in such a manner that its future growth should be favorable to the bearing and ripening of fruit. In several instances, we saw that great attention had been given to this point, especially in the beautiful orchards of Mr. Sheldon, in Wilmington, and of Mr. Buckminster, in Framingham. Nor do we think that we over-estimate the importance of this matter. Whoever wishes to have a beautiful and productive orchard must begin at the beginning, and make himself familiar with that method of pruning the young tree, which shall ensure its full grown symmetry. Let this be neglected when the orchard is young, and no subsequent treatment can atone for the oversight. In connection with this subject your committee had it in view to speak of the necessity of exercising great

discretion in regard to the proper proportion of summer and winter fruit in an orchard, and likewise, in regard to the application of alkaline washes to trees. Upon these points, the press will undoubtedly furnish the requisite cautions.

In regard to pear and peach orchards, your committee's labors were not burdensome. Only two collections of pear trees were offered for examination. Your committee, however, availed themselves of opportunities to examine several gardens abounding in this delicious fruit, in the eastern part of the county; and it is to us a matter of surprise, that it is not more extensively cultivated.

In concluding their report, the committee would add one or two remarks. And in the first place, wherever we have been we have had conclusive evidence of the good that has been effected (and that is still in progress), by the interchange of views, opinions, and information among farmers. It is no longer true, that an old newspaper, or a last year's almanac, is all the reading matter that a majority of farmers desire. They have become a reading and reflecting class of men; and the consequence is, they have settled it in their own minds what is to be undertaken, and how it is to be accomplished. The press has shown itself to be in this, as in all other departments of industrial life, a mighty engine. Meetings of farmers for the free discussion of topics connected with their vocation,—celebrations and festivals, of a more or less extensive character, these and other similar means have operated, and are still active, to rouse, guide, and elevate the agricultural classes. And this is the great want of those classes. Farming may be either of two things. It may be all dirt and drudgery—and in too many cases it has actually been so—or it may be first and foremost as a health-affording, mind-awakening, and so, a soul and body-saving occupation. "Mind among the Spindles," has already wrought a glorious revolution. Mind among the Furrows, is effecting one equally noble. "God speed the plough," and let all the people say, "Amen."

Charles Babbidge,
Samuel Chandler,
Simon Brown,
Committee.

Premiums on Farms.

T. D. Brown, Concord,	1st premium, . .	$25 00
L. H. Hildreth, Westford,	2d do. . .	15 00
Abner B. Lane,	3d do. . .	12 00

Premiums on Reclaimed Meadows.

William Brown, Concord, ...	$12 00

Premiums on Fruit Orchards.

H. Sheldon, Wilmington, best apple orchard, . .	$12 00
J. O. Freeman, Framingham, 2d do. . .	10 00
W. D. Harris, North Woburn, 3d do. . .	6 00
J. T. Buckingham, Cambridge, best pear trees, .	15 00

Questions to applicants for Premiums on Farms.

In order to obtain as full information as possible from those applying for premiums on farms, the committee propounded the following questions:

1. Of how many acres did your farm consist in 1848?
2. What was the condition of the land at that time, in a good state of cultivation, or otherwise?
3. What proportion of it was in tillage, pasture, and wood?
4. What amount of hay cut in 1848 and in 1852?
5. What grain do you raise?
6. What roots do you raise, and what value do you place upon them as food for stock?
7. At what time do you seed down grass land, spring or fall, and at about what date; kind and quantity of seed, and with what grain best?
8. At what time do you apply top-dressing to grass land, and why at that particular time?
9. How do you apply manure, composted or not; ploughed under or on the surface, and what quantity per acre?
10. Do you use guano, how, and with what results?
11. The same of plaster and lime?
12. What course do you pursue in draining—open or under-drains, use tiles, stones, or brush?

13. What depth do you commonly plough—do you use the subsoil plough, and think it advantageous or not?

14. Have you reclaimed bog meadow, and how?

15. How much, and what live stock do you keep, and what breeds?

16. Do you employ oxen or horses, and which do you consider best?

17. How much butter, cheese, or milk, do you produce?

18. What fruits do you raise?

19. What do you consider the cheapest fences?

20. Do you consider the careful cultivation of a garden essential on a farm.

21. Is there profit in raising swine?

22. What extent of orcharding have you, apple, pear, peach, or plum?

23. What distance from each other do you set your trees?

24. Do you wash them, and if so, what with?

25. Do you keep them under cultivation, and with what crops?

26. Do you think old orchards may be new topped and cultivated with profit?

27. Do you keep a journal of your farm operations?

Joseph D. Brown's Statement.

The farm I offer for premium came into my possession in 1845, by my paying certain debts and supporting my father and mother while they live. The debts and distribution to my brothers amounted to about five thousand dollars. There were about one hundred and fifty acres of land, and the valuation on the books of the assessors at the time, was near seven thousand dollars. The buildings were not very good and only one barn on the place. Since that time, I have built a barn one hundred feet long and forty feet wide, at an expense of $1,500, and repaired and altered the house at a cost of $2,300, beside a very considerable expense in altering and repairing the out-buildings.

The fences on the farm were mostly stone wall, old and poor, being crooked and thrown out of place by frosts; these had to be reset. I have built over seven hundred rods of wall,

and made more than a thousand rods of blind ditch. When I took the place, there were about a hundred apple trees, which had been set three years, and about as many old apple trees, which I have since grafted.

In addition to the original farm I have since purchased thirty acres of land that cost $500. I have reclaimed about thirty-five acres of stony brush land, at an expense of $50 an acre. I have also reclaimed about ten acres of meadow that has already returned expenses. This fall I have ploughed ten acres more, which I shall gravel the coming winter and prepare for summer tillage.

In 1850, I had on the farm four men eight months; three men four months; raised three hundred bushels corn, and planted six acres of potatoes which all rotted; raised two hundred bushels flat turnips, wintered sixty-five head of cattle and three horses. Sold $2,000 worth of milk. In 1851, I had about the same amount of help, and the products of the farm were much the same. In 1852 I had six men seven months, and four men five months; raised twelve hundred bushels of corn, six hundred of potatoes, nine hundred of carrots, four hundred of ruta-bagas, four hundred of beets, two hundred flat turnip, and sold $2,200 worth of milk.

Replies of Joseph D. Brown, to inquiries propounded by the committee on farms. See page 89.

1. 150 acres, exclusive of woodland.
2. A large portion of it impoverished.
3. Something more than one-half.
4. 70 tons; in 1850, 120 tons; in 1852, 85 tons, a light crop.
5. Mostly corn; cut oats and millet for fodder.
6. Flat turnip, ruta-baga, and carrots; believe them profitable as feed for stock.
7. On corn land in the spring, on grass land in August; 8 quarts herds-grass, 1 bushel redtop, and 5 pounds clover, mixed and sowed together.
8. In October, because the fall rains drench and carry the fertilizing qualities down.
9. Composted, and ploughed under, 25 to 40 loads, according to the soil.
10. Only once; think it was favorable on corn.

11. Do not use plaster or lime.

12. Underdrains; fill them with stones and leave them so as to plough a deep furrow over them.

13. Eight to twelve inches, according to circumstances.

14. Yes; always by ploughing if possible; roll and seed.

15. Usually, 4 oxen, 50 cows, 3 horses, 4 swine; mostly native stock.

16. Oxen; on smooth and easy land I prefer horses.

17. No butter or cheese; sell $2,000 worth of milk at the house.

18. Winter apples.

19. Stone walls, where stone is found on the farm.

20. I do.

21. I think there is, where proper conveniences are had for tending them.

22. About six acres of apple orchard in all, three acres together, the rest scattering, one-fourth acre pears.

23. Thirty-two feet.

24. Yes; with potash, clay, and manure.

25. Yes; with a variety of crops, corn, roots, and rye.

26. I do, if the turnips are sound.

27. I do not.

CONCORD, 1852.

Abner B. Lane's Statement.

Abner B. Lane's replies to questions proposed. See page 89.

1. 100 acres.

2. In a very poor condition.

3. 22 acres in meadow, 5 in English, 4 under the plough.

4. 5 tons English, 12 meadow, in 1850; 20 tons English and 12 of meadow, in 1852.

5. Rye and oats.

6. Carrots, beets, and turnips, and I consider them valuable for stock.

7. Seed in September, with twelve quarts herds-grass and one bushel of redtop.

8. In October, (no reason why given.)

9. Spread and in the hill.

10. Do not use guano.

11. Use both lime and plaster with good results.

12. ———

13. Average depth seven inches, have not used the subsoil plough.

14. ———

15. Native breed; ten cattle and two horses.

16. Use both oxen and horses; have not decided which would be best alone.

17. Sell $500 worth of milk.

18. Apples.

19. Stone wall, where stones are plenty.

20. Certainly, to raise everything for my own use, and more if a market is near.

21. There is this year; some years there is not.

22. Between three and four acres of apple trees, if they stood together.

23. Thirty feet.

24. Weak potash water and soap suds.

25. Most of the time under cultivation.

26. If the trunk is sound it is profitable to do so.

27. I do not.

My help this year has been one hired man, hoeing and haying, $25; and myself and boy. Last year I paid out $40 for help. My receipts this year will be, for milk, $500; for pork, $25; for eggs, $40; for poultry, $18; for apples, $20; for cranberries, $30; for potatoes, $125; making $758.

Abner B. Lane.

L. H. Hildreth's Statement.

The farm which I now own, I bought in the spring of 1843. It contains about eighty-five acres, including twenty of woodland and ten of poor brook meadow. The place had been rented for a number of years prior to my purchase, and the hay carried off, so that when I moved on to the farm, I found it much run out, and the buildings and fences very much out of repair.

I paid $4,337, and in order to pay for it, I mortgaged it for $4,100, paying only $237, all that I had, after buying my stock.

The land is good fruit land, and my intention has been to make the raising of fruit for sale my chief business.

The first winter I kept eight cows and a horse. They consumed all the hay that I cut on the place. For the last two or three winters I have kept on an average, equal to nineteen or twenty cows, and sold but little hay.

I have laid from 125 to 150 rods of stone wall, and grafted nearly all my old apple trees with valuable fruit. I have set out (three and four years ago) about 225 apple trees, 175 peach trees, 48 pear trees, 25 Isabella grape vines, 25 to 30 cherry trees, 15 apricot trees, and smaller fruits, such as strawberries, currants, &c.

I am now employed in digging drains in my wet grounds, and filling them with the small stones from the surface of my ploughed lands, preferring this way of getting rid of them, to putting them into walls. I have dug and filled, or am filling, about sixty-five or seventy rods this fall, some portion of them five feet wide, others two or three.

These things, with my limited means, have been the work of time. I have not done as I would, but have been obliged to do as I could. With a young family dependent upon me, unable to earn their living, but, thank God, almost always able to eat their share; with my interest money ($250 a year) to make out, and my farm to improve, I have so far weathered the storm, with a head wind, and am a little nearer the harbor than I was when I commenced the voyage. I have paid up about $600 on the mortgage, and laid out nearly $2,000 in permanent improvements on my buildings and farm. I now cut more than twice as many tons of English hay as I did when I came on the farm. Many of the trees are beginning to repay me for my labor upon them.

In regard to the queries put me, I will answer in course.

1. Of how many acres did your farm consist in 1848?

About eighty-five acres.

2. What was the condition of the land at that time, in a good state of cultivation, or otherwise?

I had been gradually bringing it into a better state than when I bought in 1843, as my limited means would allow.

3. What proportion of it was in tillage, pasture, and wood?

I should think twenty-five acres in English mowing, of

which I plant with corn and potatoes, or sow with the small grains, about six or eight acres, annually; about twenty acres of pasture land; the same number of acres of woodland; the remainder meadow.

4. What amount of hay cut in 1848 and in 1852?

My main crop of English hay was much less in 1852 than in 1848. I had a small piece of reclaimed meadow on which the hay was much better this year than it was four years ago.

5. What grain do you raise?

For a hoed crop, corn; of small grains, I find I can make it much more profitable to raise oats than rye or barley; wheat I have never yet tried, but propose to do so on about an acre this fall.

6. What roots do you raise, and what value do you place upon them as food for stock?

Carrots I have raised to some extent, and consider them valuable for horses, oxen, or cows, adding, I believe, however, more to the quality than to the quantity of milk in the last named case. Flat turnips, which I also raise to some extent, (sown broadcast through my cornfields,) I think on the contrary, increase the quantity of milk, when fed to cows, without improving its richness. Potatoes I raise for my own consumption, and to a greater or less extent for market.

7. At what time do you seed down grass land, spring or fall, and at about what date; kind and quantity of seed, and with what grain best?

I prefer, from trials which I have made at both seasons, to sow my land with grass seed in the spring, at the same time with my oats. My experience has convinced me that unless the land is very rich, the first crop of grass is better when seeded in May than in August. I sow ten quarts of herds-grass, three pecks of redtop, and more or less clover seed to the acre, as I think the land requires. In answer to the last clause of the question I would say, that I should prefer to sow my grass seed with rye, were my land suitable to produce that crop, which it is not. I can raise four bushels of oats easier than one of rye.

8. At what time do you apply top-dressing to grass land, and why at that particular time?

In the fall, and spread it just before a rain.

9. How do you apply manure, composted, or not; ploughed under or on the surface, and what quantity per acre?

I compost my manure in my barn cellar, with peat and wash from the road side, soil from beside the walls, &c. On dry land I plough it in; on moist land I spread after ploughing, and harrow thoroughly. I made last year 297 loads. My carts hold thirty bushels.

10. Do you use guano, how, and with what results?

I have used considerable guano mixed with charcoal dust, or plaster. Charcoal dust is the best absorbent of ammonia. I consider guano a very valuable stimulant to start corn, or as a top-dressing for grass land.

11. The same of plaster and lime?

Plaster I use annually, sowing it on my pastures, from one to three bushels to the acre; also putting it on my potatoes, a small quantity to each hill at the time of planting, or immediately after they come up. I have but little land on which lime would work favorably.

12. What course do you pursue in draining—open, or underdrains, use tiles, stones, or brush?

An answer to this qustion will be found in the body of my statement.

13. What depth do you commonly plough; do you use the subsoil plough, and think it advantageous or not?

I have been gradually deepening my soil, and now run my surface plough down from eight to ten inches, according to the land I am working. When I came upon my farm, the land had been skinned, emphatically, both in being ploughed and cropped. I think that the plough of the tenant, (which I bought of him for fifty cents, on his leaving, and dear at that,) had not run more than three or four inches deep in the time that he carried on the farm. I have had a subsoil plough for the last three years, and consider its use of great advantage to the farmer, particularly is the benefit derived from it perceived in a summer like the past.

14. Have you reclaimed bog meadow, and how?

I have one small piece (about an acre) of bog meadow reclaimed. My course was to take out the bushes,—bunches of which as high as my head were scattered thickly over it,—

put them and the roots in piles till dry, and then burn them; after spreading the ashes, I ploughed and planted the piece with potatoes for two years, then laid it down with oats, giving it a good coat of manure. My grass has been good constantly, since. I shall give it a top-dressing this fall. It has been reclaimed five years.

15. How much, and what live stock do you keep, and what breeds?

An answer, in part, to this question will be found in the preceding statement. In the summer I generally keep two horses, one pair of oxen and eight cows.

16. Do you employ oxen or horses, and which do you consider best?

I keep both, for work; should prefer horses for nearly all kinds of farm work on suitable land.

17. ———.

18. What fruits do you raise?

I sold last year 467 barrels of apples, which I think averaged me, $1 75 per barrel. My peach orchard is young, and commenced bearing last year. This year the peaches were entirely cut off by the cold weather of last winter. I cannot state with accuracy the number of bushels of pears I sold, I should think ten or fifteen. Of the smaller fruits, strawberries, grapes, currants, and gooseberries, I have a moderate supply of some, and a large amount for sale of other kinds. I consider, from my limited experience, that the luxuries of life pay the laborer better for his work than the necessaries.

19. What do you consider the cheapest fences?

With me, stone wall.

20. Do you consider the careful cultivation of a garden essential on a farm?

This is a difficult question to answer, as I have done less in that way than I should.

12. Is there profit in raising swine?

I think no stock on a farm will pay a better profit, if pigs from the best breeds are purchased, and attended to with care.

22. What extent of orcharding have you, apple, pear, peach, or plum?

23. What distance from each other do you set your trees?

24. Do you wash them, and if so, what with?

25. Do you keep them under cultivation, and with what crops?

The first of these questions is answered in my statement, so far as young trees are concerned. I have beside, of large apple trees, which have been grafted with valuable fruit since I bought my farm, I should think from 175 to 200, part of which have made good heads and many of which have been grafted but one, two or three years. The orchards that I have set out, I have put two rods apart each way. I wash them with potash water, or with whale oil soap suds and ashes. In answer to the last question I would say that they are so much scattered that it is nearly impossible for me to keep the land under the whole in cultivation. I make it a point however, to plough each piece frequently, and keep it up as long as I can, manuring liberally.

26. Do you think old orchards may be new topped and cultivated with profit?

I do, as I have worked my old trees over, I am confident, with advantage.

27. Do you keep a journal of your farm operations?

I do; a book convenient to my hand, which I can take up at any moment, to make record of anything I wish.

In answering your questions I have compressed as much as possible, and still have covered much more paper than I meant to have done.

I would say farther, that the help which I hire consists of one young man, who has been with me nine years, and to whom I pay $12 per month, for 7½ months, . . $90 00
One girl, at $1 per week, ... 52 00
One man one month, ditching, . . . 14 00

$156 00
Per contra; my extra wages, apart from the farm, . 300 00

ORCHARDS.

Henry Sheldon's Statement.

My first orchard contains about four acres of land, and was purchased in the spring of 1845. The soil is loamy, with

gravelly subsoil. It was pasture land, quite rocky, and considerable bushy at the time. It contains 152 trees, 50 of which were set out the last part of April of the same year, the remainder the following spring. The trees are all Baldwins, from one to two years' growth from the bud when set. Before setting the trees, I pared all the roots smooth with a knife, where they had been injured in taking up. I set them the same depth as they formerly grew in the nursery, being careful to place the roots in their natural position. In the sward land I placed soil from an old corn field among the roots, pressing it in firmly to prevent the tree from leaning. I planted the ground with potatoes, in 1845 and 1846. In the spring of 1847 it was sowed with oats and the crop ploughed in in June. In August it was sowed down to grass, and has remained so ever since, not allowing the grass to grow within four feet of the tree. I have hoed around them three or four times every year. At the time it was planted it was manured with slaughter-house manure, about three cords to the acre; since which time, there has been no manure used on the field until the first of last winter, and then two wheelbarrow loads of stable manure were put to each tree, heaping it up around the tree. In the spring I spread the same and hoed it in, to the distance of five feet around the tree.

My second orchard consists of about one and one-fourth acres of land of deep, rich soil; a part of it is gravelly subsoil, and a part of a cold, sandy nature. It contains 86 trees. A part of them were set in the spring of 1848, and the remainder in the spring of 1849. In the cold ground, I removed the soil, where the trees were to be set, for the space of about eight feet, and filled with clayey gravel and small stones; setting the roots of the trees near the surface of the ground. The trees are of various kinds: Baldwin, Maiden's Blush, May Queen, Old Hundred, Red Astrachan, Gravenstein, Millerite, Gilliflower, Sopsovine, Bartlett, Sudbury, and Summer Sweetings, &c. The land has been cultivated every year, and planted with potatoes till this season, when I planted it with corn.

The trees in the first orchard are set two rods apart each way; in the second, one and one-half rods. I have washed them once a year, in May, with strong soap suds. My mode of trimming is, when the tree is high enough, to cut off the

main branch, and leave three or more to form the tree. I generally leave three. When the trees are young, the little spurs that start out should be left on, for the purpose of making the body of the tree stout, so that it will not bend over. Any shoots that are starting out to make large limbs where they are not needed, should be cut off. In regard to borers, I have never as yet discovered one about the trees. Wherever I have found the caterpillar eggs, I have taken them off and burnt them. If any escaped my observation, until hatched, I have taken them off and destroyed them. All other worms have shared the same fate.

Wilmington, Sept. 20, 1852.

James O. Freeman's Statement.

Sirs,—The orchard I offer for premium, contains 306 apple trees: 64 set in the spring of 1844; 50 in the spring of 1846; 57 in the spring of 1847; 60 in the spring of 1848; 75 in the spring of 1852.

The land on which the trees are set, in every instance, (except those set this present season,) has been ploughed the fall before setting, it being sward land. I have dug my holes for the trees, about two and one-half or three feet deep, and three or three and one-half feet wide, filling the bottom part of the hole with the sods that came from the top of the hole, and a small quantity of peat mud, say one or two bushels, and filling around the roots with loam from the top of the ground. In the fall, after the trees were set, I applied about a bushel of compost manure, well filled with ashes, around each tree. You will understand that this last application was made the year the trees were set, making only once for each lot of trees. I have practised washing my trees with potash water, every year but one since they were set, that year did not apply anything. I cannot say in what proportion I make it, for I never weigh it or measure the quantity of water. I always put my potash in a vessel, and pour some water to it, letting it dissolve as it pleases. I then take some of the liquid and add a quantity more of water to it, (judging of its strength by taste,) and with a sponge apply it to the trees. I make it very weak for the trees that have been set only a few months. I wash my trees

in July, trim them in April or May, as best suits my convenience. Think May is preferable.

The soil in which the trees are growing is a sandy loam, with some stone about two feet or more below the surface. I manure about 30 or 35 cart loads to the acre, plough it in about four or five inches deep. This year I manured in the hill. Have planted corn the first year of setting the trees, and potatoes the next. Have harvested one year, from one acre of the orchard piece, 127 bushel baskets of sound ears of corn. "We people who measure our corn by the bushel and land by the acre, and not by the produce of one hill, and then make a mathematical calculation, call this quantity a good yield." I have also taken from the piece, on different parts of it, two crops of clover, one of barley, one of rye, two of oats, and one of buckwheat.

The manure is taken out of the yard in the spring. Hogs run in the cow yard. Put in the yard, peat, mud, loam, potatoe vines, leaves, &c. Some years, have used leached ashes mixed with the manure.

Have not been troubled with borers, or other worms, to speak of.

On some of the trees set in 1844, the yield this season is over two barrels on a tree, of very fine apples, and many trees with a less quantity. Some of those that were set in 1848, and only one year old from the bud at the time of setting, are bearing.

My principal variety is the Baldwin. In the low ground there are some Greenings. I have a few other varieties, the names of which I have forgotten at this time.

Framingham, Sept. 15, 1852.

William B. Harris's Statement.

Gentlemen,—My trees were set in the spring of 1844, and were quite small. The soil is rocky, although a part of it is loamy, as you observed at your examination. There are 236 trees, which were all set out at first, but a few died, say half a dozen, which I have replaced from year to year.

The first summer after they were set, I sowed the land (there is six acres) with rye, which I noticed did the trees no

good. After the rye was removed in the fall, I ploughed one-half (three acres) and laid it down to grass. In the summer of 1845, I planted the other three acres, dunging in the hill, and spreading a little manure. I noticed the trees where the grass was, in the fall, were much behind those where the ground was planted. Besides, they were covered with innumerable quantities of lice, which I at once attributed to the grass being among them, while the rest had no lice of any consequence upon them. The next year I ploughed and planted the whole six acres, which I have continued to do every year since, spreading my manure, and dunging in the hill, but not doing both in one year. I have whitewashed the trees once, the year after so many lice gathered upon the half, and I thought it had a tendency somewhat to remove them. I have put a little muck around the trunks of the trees, and once put some oyster shells about them. I have pruned the trees every year till the present, which I deferred unintentionally. I usually prune in June. I have applied no "fancy work" to the orchard, but have simply kept the ground ploughed, and shall continue to do so. My motto is, "To keep land ploughed where young trees are." I can now see a difference between the trees where the grass was and the other half.

My treatment in regard to insects is simple. I have never been troubled with borers and the like. In the spring I have removed all the caterpillars that I could find, but have in no other way been troubled with any kind of insects. In fact, I have never tried any experiment, nor done any "fancy work," in any way, shape, or manner.

North Woburn, Sept. 1852.

Pear Orchards.

Joseph T. Buckingham's Statement.

Gentlemen,—At your request, I send you a statement concerning the pears, which you saw yesterday in my garden,—as follows:—

I have measured the *square* on the lower part of the garden, which you first visited, and find it to be fifty-two feet by forty-two, or about two thousand two hundred square feet. On this plat is one large apple tree, two peach trees, two plums, one cherry tree, and twenty-one pears. Of the pears there are 2 Duchesse d'Angouleme, 2 Louise Bonne de Jersey, 5 Seckles (rather small), 3 Bartletts, 1 Beurre Royal, 1 Beza de la Motte, 1 Passe Colmar, 4 whose names are lost, and two smaller ones, bought at auction, whose names I never knew. These last have never borne fruit. Of the four others, unknown, or at least two of them, the fruit you tasted, and approved. The other two bore early and excellent fruit, and all bore luxuriantly. All these trees, exeept one, are on quince stocks, and were put out, in part, six years ago last spring, and the other part seven years ago this autumn. This portion of my garden, when I bought it, in 1833, was wet and mirey, with a few alders, a few bogs and some stones. After clearing off the stones and bushes it was covered with two or three loads of sand, ploughed and planted with potatoes, for two or three years, and afterwards with other garden vegetables. Several peach trees were placed in it, which produced most luxuriant foliage, but very little fruit. These were removed and their place supplied with pears. No manure has been given to this piece of ground, but such as has been made of the surplus vegetation, thrown into a pen where one pig has been kept, and mixed in the spring with the contents of the vault, and occasionally a small quantity of coal ashes—anthracite. The spaces between the trees, as you may have observed, are filled up with raspberries and rhubarb. The soil, which lies on a strong foundation of clay, is nearly two feet in depth.

The pear trees on the southerly side of the garden, forty-three in number, have been planted at various times,—all but three or four within seven years, and most of them within five. Four of them are Duchesse d'Angouleme, 4 Louise Bonne, 2 Maria Louise, 2 Vickar of Winkfield, 2 Flemish Beauty, 3 Bergamot, 2 Chaumontelle, 2 Beurre Diel, 1 Belle et Bonne, 3 Bartletts, 1 Summer Franc Real, 1 Madeleine, 1 Van Mons Leon le Clerc, 1 Hacon's Incomparable, 1 Brown Beurre, 1 Napoleon, and of the others, the names I have lost. This strip of ground is 220 feet long by 25 in width; and on it,

beside the pear trees above mentioned, there are two very large and four smaller cherry trees, 2 large apple trees, 1 large and four smaller peaches, 1 Siberian crab, 11 quinces—rose bushes and other flowering shrubs and plants, too numerous to mention. Some eight or ten pear trees are scattered in other parts of the garden, chiefly in a bearing state. The soil in the southerly part of the garden is similar to that before described, except that it was not quite so wet originally. All of it lies on a bed of clay, and has had but little manure. It is fourteen years since I kept a cow, eight years since I kept a horse. Last November, I bought two small loads of horse manure, which was used on a small spot appropriated to beans, beets, carrots, &c. My only reliable source of manure, is the vault, the pig pen, the waste from the kitchen, and the weeds. It may not be entirely out of place, to say here, that the emptying of a vault is not quite so offensive as some suppose, if the proper precaution should be taken. Twenty-four hours before you begin the work of emptying, dissolve twenty or thirty pounds of copperas (sulphate of iron) in the necessary quantity of water, and throw it into the vault, and the offensive odor will be hardly perceptible.

I have never kept a precise account of the products of my fruit trees, for I have not cultivated them for the market,—having no taste or faculty for trading. My own family are supplied bountifully, and more than we use is presented to friends and neighbors, and thence is derived the principal compensation for the labor of cultivation. If the whole product of my little garden had been sold this year, at prices usually obtained for raspberries, currants, and pears, I think it would have amounted, at least, to one hundred dollars. The whole extent of my estate is 220 feet by 150 feet 6 inches, making a little more than 33,000 square feet. Nearly, if not quite, half is occupied by the house, barn, and other out buildings, clothes yard, carriage way, and other gravel walks. I could add many other remarks to show how much can be obtained from a small piece of ground; but enough has already been said to answer the purpose of the committee, to whom are respectfully tendered the true regards of their friend and servant.

Cambridge, Sept. 16, 1852.

Reclaimed Meadows.

William Brown's Statement.

Gentlemen,—The piece of meadow to which I invite your attention, contains about four acres. It was drained in 1839, by ditching around the whole piece, and one ditch through the centre. I stoned and covered nearly all the ditches, and then ploughed by means of ropes and pulleys, it still being too soft to admit the team upon it. Potatoes were then planted, dug early, and the ground seeded down with herds-grass and red-top. I then applied about ten loads of manure mixed with forty loads of sand. After this I got four crops of hay of about two tons to the acre, and then ploughed and cultivated the same as I do any of my upland.

I have now about one acre planted with potatoes, which looks well. Before I drained this land I considered it worth very little, if anything; now it is the best land I have.

Length of covered ditches, 127 rods. Cost of digging, stoning and covering, $1 per rod. Length of ditches not covered, 145 rods. Cost of digging, twenty-five cents per rod.

Concord, Aug. 1852.

Apples and Pears.

The committee on apples and pears, report that the exhibition of these fruits, in variety, beauty and excellence of the specimens far exceeds that of any previous years in this county. Your committee, though somewhat familiar with exhibitions in this department, in different counties in this Commonwealth, have never witnessed any that, in the perfection of the specimens, and in the completeness of the varieties, surpassed that made this day.

The committee have found great difficulty in awarding the first premium offered by this society. They have diligently employed all the time allowed them, for the performance of the duty assigned them, in making their award.

The exhibition of the fruits to-day, from nearly one hun-

dred contributors, contains nearly all the standard and well-tested varieties of apples and of pears. In the department of pears, almost all the late varieties that have been fruited in this country were in exhibition.

It is undoubtedly true that the cultivation of the apple and the pear is profitable or not, according to the care and skill employed therein. Experience has taught those who have tried the cultivation of either kind, that the following method, carefully executed, will, with great uniformity, result in success.

In preparing the ground, trench wide and deep the hole that is to receive the tree. Before setting the tree, the hole should be partly filled with well-rotted manure. This last point must be carefully attended to, as new, unprepared manure, brought near the roots of the young tree would almost certainly destroy it. It is a matter of the first importance in setting trees, that they should not be set in the earth deeper than they stood in the nursery. And if this direction be not observed, there will certainly be a failure in having a healthy tree. Very exact gardeners deem it important that the tree shall stand with the same aspect in the orchard, that it had in the nursery. In planting an orchard, be careful that the trees transplanted are thrifty and carefully removed; and if any root be bruised in taking up the tree, the same should be nicely trimmed, and the bruised part cut off by a sharp knife, otherwise gangrene will follow, and though the tree may live, it will be in a feeble, stunted condition, and after a few years will wither and die. After transplanting the trees into your orchard, let the ground which received them be for several years cultivated. The young trees should be washed for some years, after they are removed to the orchard, by a wash of oil soap or potash water. The former is recommended, after long experience, by skilful cultivators, who deem it less likely to prove injurious to the tree in unskilful hands.

Much care is required in pruning the apple tree. By skilful cultivators it is deemed best to remove all but two or three main branches from the trunk. This will form a sufficient lead in such form, that the fruit in ripening will have the best exposure to the sun. Care must be observed, that the branches so reserved shall be so joined to the trunk as not to be in

danger of splitting down. Trees well transplanted, and tended well, in good soil, on the fifth year after the setting out, produce fruit in considerable quantities.

The cultivation of the pear may be made very profitable. It is now the generally received opinion of cultivators, that an acre of land set with pear trees upon the quince stock, will produce more fruit than when set on the pear stock. The pear tree on the quince may be safely set eight feet apart, and in this way, many varieties may be raised in a small enclosure.

A moderately dry soil, though perhaps not producing so rapid a growth of wood, will produce pears of higher flavor. The pear demands large quantities of well-rotted manure, if applied in the fall, in order to produce ready and good crops. In dryish soils, the best manure is barnyard manure, mixed with unleached ashes and peat mud. Street wash has been used with success by cultivators of great experience. Various reasons are assigned for the effects of this manure. It is supposed by some, that the iron contained in it may supply a necessary aliment to the tree. Doubtless, where there is a deficiency of this element in the soil, that would fully explain the success of the application. Probably a better reason is that there is considerable manure in the wash, and the public use of the road has pulverized and made very minute the particles that compose such wash, and in this way the tree most readily takes up the comminuted particles. The fact of its availableness as a nutriment to the pear tree, is beyond dispute, and has been in use to some extent for many years.

In the cultivation of the pear, regard should be paid to one thing in particular. Many varieties, it is well known, have failed wholly, or in part, except in very sheltered situations, when set upon the pear stock. Many of these varieties, thus effete, still flourish with undiminished vigor on the quince stock. In this category are the following varieties, to wit:— Napoleon, Doyenne, blanc, (old St. Michael,) Doyenne, gray, Duchess of Angouleme, and Beurre Diel.

As to the nature of the soil best adapted to the pear, your committee had intended to have drawn out somewhat in detail, whatever on this subject experience in culture and observation had supplied. But running it out in detail, it was at once perceived, that it would require a volume instead of the

usual limits of a report. It is familiarly known to cultivators, that different varieties of the pear require, to bring them to perfection, soils different in dryness and moisture. And the culture of the pear would be most favorably effected by a treatise on this subject, stating with precision, from chemical analysis, the elements of the different kinds of soil adapted to each variety, and the degrees of moisture required for each. And with this the different modes of distinguishing the varieties of the fruit, beginning from the first development of the leaf or blossom, to the maturity of the fruit. A book upon this subject, accurately written, would prevent many failures, save many disappointments, and contribute most materially to the advancement of the general culture of the pear. Such knowledge is possessed by cultivators, and it is to be hoped may soon be drawn out into a treatise for the guidance of the less skilful.

All which is respectfully submitted.

EDWARD MELLEN,
Chairman of the Committee.

October 6, 1852.

Premiums on Apples.

James Eustis, South Reading,	$12 00
John B. Moore, Concord,	6 00
Isaac Holden, Billerica, gratuity,	3 00
Asa Clements, Dracut, do.	3 00
H. A. Wheeler, Concord, do.	1 50
Israel Putnam, Chelmsford, do.	2 00
A. G. Sheldon, Wilmington; J. S. Wetherbee, Marlborough; Rufus Moore, Groton; Peter Lawson, Dracut; Moses Prichard, Concord; Nathan Barrett, Concord; W. W. Wheildon, Concord; Nathan Barrett, Concord; and John Gordon, Brighton, each a gratuity of	1 00

Pears.

J. Stickney, Watertown,	$6 00
Hovey & Co.,	3 00

John Gordon, Brighton; Solon Dike, Stoneham; Charles Heard, Brighton; Peter Lawson Dracut, each, a gratuity of $2 00

Butter.

Your committee, in pursuance of their duty, have attended to its requirements, and have the honor to make the following report.

The number of entries for premium were nineteen, presenting specimens of butter worthy of all praise, and which required extremely nice tasting to enable the committee to decide which was entitled, more than another, to the premiums at their disposal.

In no former instance have the samples, (with one or two exceptions,) come more nearly to be entitled to "the first premium" than at the present exhibition, giving proof of a certain and positive improvement in the production of the important and desirable addition to our tables, of good, sweet, pure butter. Particular attention has been devoted to the examination of the certificates in connection with the samples, and we find very little, if any, particular variation in the course pursued by all the makers; and we have come to the conclusion that all know how to make good butter, and nothing but proper care is required that it should be well made, to render it perfect.

It is a source of regret that seven of the nineteen samples were not accompanied by the proper certificates required by the positive rules of the society, and two had not the proper quantity required, by which omission they were excluded from being entitled to premium. It is sincerely hoped that this may be better understood in future, for some of the samples embraced in this category, were most temptingly sweet and delicious, and would have satisfied the taste of the most fastidious epicure.

Many of the samples presented were so nearly equal to any offered, that the committee found it very difficult to decide, and would gladly have awarded more premiums, had they had

authority, and funds at their disposal; they trust that others will for this time "take the will for the deed." To enable the society to be more liberal, and enlarge the premiums on this most important branch of female industry, it is hoped the citizens of Middlesex will unite heart and hand in promoting the best interests of the oldest Agricultural Society in the Commonwealth, and thereby so increase its funds, as to enable it to extend its bounties and usefulness.

For the committee,

ALFRED ALLEN, *Chairman.*

SOMERVILLE, Dec. 14, 1852.

Premiums on Butter.

Sherebiah Spaulding, Chelmsford,	1st	premium,	.	$3 00
Wm. F. Barnard, Marlborough,	2d	do.	.	2 50
Charles Howe, do.	3d	do.	.	2 00
John F. Rice, do.	4th	do.	.	1 50
E. G. Bartlett, Littleton,	5th	do.	.	1 00
Daniel L. Giles, gratuity,	.	.	.	1 00

The statements presented so nearly resemble each other, that the following statement will give, very nearly, the mode adopted by all in the making their butter.

John F. Rice's Statement.

The box of butter that I offer for your inspection is a specimen of the butter made from a dairy of ten cows, and was made in the following manner. The milk is strained into tin pans standing on the bottom of the cellar for about thirty-six hours. The cream is then taken from the milk, put into tin pails, and put in a cool place near by, or on ice, as is thought necessary to preserve the right temperature.

This butter was made from the cream of three days' milk, and was churned in a common crank churn until well come; the buttermilk was then taken out, then rinsed in cold water, taken from the churn, thoroughly worked, and salted about an ounce to the pound. After remaining about twelve hours, it was worked into pound lumps and prepared in the manner you see here presented.

MARLBOROUGH, Oct. 6, 1852.

Horses.

There were four breeding mares exhibited. Only one stud was offered. Several geldings were offered, but in the opinion of the committee, neither of them was entitled to a premium. If premiums were awarded to such horses, hundreds in the county would be equally entitled to them. No carriage horses were exhibited. Bulkley Moore, of Framingham, exhibited a fine, well trained pair of draft horses. Daniel Wetherbee, of Acton, exhibited a well trained pair of horses. Your committee are sure that there are better horses in the county, and that when the attention of the community is called to this branch of the exhibition, a much finer show of horses will be presented.

Respectfully submitted,

John Raynolds, *Chairman.*

Premiums.

David Loring, Concord, for breeding mare, .	. $3 00
Bulkley Moore, Framingham, for draft horse, .	. 4 00
D. Wetherbee, Acton, for draft horse, . .	. 2 00

Bulls and Bull Calves.

Native Bulls. First premium $8. To Constantine Hill, of Bedford; a most splendid animal, one year and four months old, with the best points for dairy purposes of any native bull shown, and the committee would urge upon all having first rate cows, to avail themselves of the opportunity to improve their stock, when they have it in their power, from such a fine animal.

Second premium, $5. To Moses Stone, of Watertown; a very fine animal, with good dairy points, one year and ten months old, and the committee can also recommend him for raising good dairy stock.

There were a great many very good bulls shown, of which your committee would make honorable mention, viz.:—Asa

Hodgman's, of Chelmsford, Aaron B. Rice's, H. Sheldon's, of Wilmington, and William Hawes', of Woburn. The committee also granted a gratuity of $3 to Varnum Holt, for a bull, not for any particularly fine points, but for being exhibited as one of three at a birth, having his two heifer mates exhibited in the same pen.

Devons. First premium, $8. To William Buckminster, of Framingham. The committee would say in regard to this bull, that they do not consider him an animal for good dairy qualities, and as such could not recommend him, as in their unanimous opinion he was deficient in those points, but for raising working oxen his points are much better.

The committee did not award any second premium, as there was no animal exhibited worthy of it.

Ayrshires. First premium, $8. To Gorham Brooks, of Medford; one of the finest animals on exhibition, two years and two months old, and an imported bull, that your committee would unanimously recommend for service to all lovers of superior stock who wish to improve it, both in very superior dairy qualities, and of fine, symmetrical points; he is an animal that Mr. Brooks may well be proud of, and we think this society and the farmers of Middlesex ought to thank him for his liberality in importing and introducing such a valuable animal to their exhibition and for their use, as it must have been at a very heavy cost, with a great deal of care in selection.

Second premium, $5. To George M. Barrett, of Concord; an animal of fine points for dairy use, and purely bred; one year and six months old; and your committee can with confidence recommend him, and they would here state, that it was with considerable difficulty that they decided between the above bull, and one shown by William Spencer, of Lowell, their points and valuable qualities being so near alike.

Your committee would also make honorable mention of a beautiful animal, two years and three months old, by Henry Rice, of Marlborough; his dairy qualities for raising stock from, are very finely developed.

Durhams. Your committee awarded a gratuity of $5 to Horatio Merriam, of Tewksbury, for a fine Durham bull, six years old. Mr. Merriam stated he was a valuable animal, both in getting good stock, and a fine docile animal at work,

having been yoked every day in ploughing, and all other work, on his farm for two years.

Two very fine bulls of this class were exhibited; one by A. B. Hagget, of Lexington, and another by Henry Rice, of Marlborough.

Bull Calves. First premium, $4. To John Johnson, of Framingham; a splendid animal of the Devon breed, very superior in all points, both for the dairy purposes and to raise working oxen from.

Second premium, $2. To J. Derby, of Concord; a very nicely made animal.

One pure bred Alderney bull calf, four months old, was shown by Peter Lawson, of Dracut, of beautiful and fine symmetry, and first rate dairy points.

The committee close their report with a few remarks. The committee were much pleased with the appearance of the animals exhibited, being 32 in all. 19 Natives, 5 Devons, 4 Ayrshires, 3 Durhams and 1 Alderney, and they showed a vast improvement on former years, and which only requires to be steadily persevered in, to bring the cattle of Middlesex county up to as high a standard of excellence as those of any other county in the State. As we are the oldest society, so we ought to be the best. But in order to produce this result, the committee would again recommend the great importance of producing pure, thorough bred bulls, especially those of well known character for excellence as regards their respective purposes. It is only when the blood is pure and well fixed that any perfect reliance can be placed in the bull transmitting his own valuable properties to his offspring. When the blood is not pure and well fixed in the animal bred pure, he is liable to breed back again into the inferior stock of former generations. It is of the greatest importance that the points in the male should be the most perfect, which in the female are the most imperfect. And also that all other points in the former should be equal, and, if possible, superior, to those of the latter, lest in trying to remedy one defect, a greater may be produced; for the principle that "like produces like," extends as powerfully to the defects as to the excellencies of the animal. The progeny infallibly inherits the defects, as well as the excellencies of the parents, and no improvement in a good parent can,

compensate for the introduction of an obvious blemish. It is a matter of great importance to the breeder, that the animals bred pure have what is called good handling properties, viz.: —a spongy, elastic softness, in distinction from the hard, harsh, unyielding nature of the skin, and the texture immediately beneath, which is commonly called the case, in all improved breeds of animals.

Good handling is always a proof of early maturity, and also that the animal will appropriate its food to the best possible use. Selection with judicious and cautious admixture is the true secret of forming a breed; the errors to be avoided are, too long continued and obstinate adherence to one breed: and on the other hand, and even more dangerous, violent crosses in which there is similarity between the soil, the pasture, or the points and qualities of the animals that are brought together. The skilful breeder looks carefully over his flock, and he observes that some of his cows—the food and general management being the same—arrive earlier at maturity, fatten more quickly, or produce more milk, (or they may have all these qualities united in more or less perfection) than others; there is the same attention paid to all, but the profit is abundantly more from some than from the majority of their companions. He is anxious to account for this; he compares these cows with some of their companions, and he observes that there is an evident difference of conformation and fineness of line, and a beautiful proportion of every part. He studies this, and he finds that there is more or less of this conformation in every animal that materially outstrips their companions. He then looks around with great care and selects the bull which possesses in the greatest possible perfection the conformation which he has found from experience to be best adapted for his purpose; for, as has been already stated, the form of the animal best adapted for the shambles, and the form best adapted for the dairy, are considerably different. But there are other things to be attended to in breeding besides the selection of proper animals. It is necessary that they be well fed and well sheltered, in order that their points may be fully developed in the best possible manner. Suitable food and shelter has much to do with the conformation of the animal. Young animals, bred especially for the dairy, should be fed to a considerable extent on

a bulky kind of food, so as to enlarge their abdominal region and give it a capacity of holding a large quantity of succulent food to be manufactured into milk. But animals bred for the shambles should be fed on rich and highly nutritious food, in order to develop their most valuable points, and also to bring them to early maturity. The nature of their food does not require an enlargement of the abdomen, as in dairy stock, and as it is less valuable than other points, it should not therefore be increased at their expense.

The above, the committee would recommend to the special attention of those who raise their own stock, and also hope that those farmers and others interested in the prosperity of our agricultural societies would give more attention to the suggestions of the committee, they having every confidence that it will be found on trial to their own interest, as well as to the interest of Middlesex county, to raise their own stock from well-known animals, than to depend on purchasing from transient droves, knowing nothing of the merits or any of the points of the stock such transient animals are from.

P. Lawson, *Chairman.*

Heifers.

The committee on heifers found a large number of fine animals entered for premium. The competitors were so fairly mated it was difficult to decide which was best. And the committee wish, on that account, that a larger number of premiums could be awarded.

There can be no doubt that an increased interest is awakened among the farmers in this matter. The statements which were handed in by the owners of the milch heifers confirmed this. The animals themselves confirmed it. And the younger stock, numerous, handsome and well formed, is an indisputable evidence of this growing interest. The milch heifers entered, were nearly all natives. Many of the younger animals, the one year and two years old, were of the Ayrshire, Durham, and Devon stock. The best heifer calf, and a choice one, too, in the judgment of the committee, was of the Alderney breed.

They award, on milch heifers, to Asa Melvin, of Concord, first premium of $6. To Amos Carlton, of Chelmsford, the second, $4. A gratuity of $2 each, is recommended to George M. Barrett, of Concord, and Edwin Wheeler, of Concord.

On two years old heifers, to H. H. Bigelow, of Marlborough, first premium of $5. To George M. Barrett, of Concord, the second, of $3.

On yearling heifers, to Henry Rice, of Marlborough, first premium of $4. To Jabez Wetherbee, of Marlborough, the second, of $2.

On heifer calves, first premium of $4, to Elijah M. Reed, of Tewksbury. To Henry Blanchard, of Wilmington, second premium, of $2.

Leonard Huntress, *Chairman.*

George M. Barrett's Statement.

Gentlemen,—The milch heifer offered by me for premium, is half Ayrshire and half native, and is two years and two months old. She came in about the middle of August, when my feed was entirely dry, and not calculated to make milk. She has been giving, for the last two or three weeks, nine and one-half quarts of milk per day; her keeping has been nothing but grass feed, and that rather poor.

Concord, Oct. 6, 1852.

Edwin Wheeler's Statement.

Gentlemen,—My heifer that I offer for inspection, was two years old last April, and native breed. She calved the 30th of August, and she gives now eight quarts of milk per day. Her keeping is nothing but dry cornstalks and grass.

Concord, Oct. 6, 1852.

Elijah M. Reed's Statement.

Gentlemen,—The Alderney heifer offered by me for premium, is eleven months and twenty days old. She was from my thorough bred Alderney cow. I took her away from the cow when three days old, and gave her five quarts of new milk per day, and a little meal occasionally, till she was four months

old. She then had skimmed milk two months, and has had nothing but ordinary pasturing since.

Tewksbury, Oct. 5, 1852.

Amos Carleton's Statement.

Gentlemen,—The heifer here offered for a premium is two and one-half years old, is of the native breed, and was raised by me. She calved the 13th day of August. In three days she gave $31\frac{1}{2}$ quarts of strained milk,—averaging $10\frac{1}{2}$ quarts per day, and weighing two pounds and seven ounces per quart. Her keeping has been nothing but green stalks with what feed she got in the pasture; stalks have been her principal living for the last two months.

Chelmsford, Oct. 6, 1852.

Henry Blanchard's Statement.

Gentlemen,—The father of this calf was a beautiful animal of great celebrity, in New Hampshire, and pronounced superior to any animal of the kind in the northern part of the State, and a direct descendant from Mr. Webster's far-famed Franklin bull. The calf came on the 27th day of May last past, therefore will be nineteen weeks, or four and one-third calendar months old on Thursday, the 7th inst. I observed, when she was about a week old, that she had quite an inclination to eat grain from her mother's measure, and I ordered her fed daily with fine feed and oats, which when presented to her, she would very often leave her milk to eat. I at that time offered her water, which she drank with her own accord. Since that time, whenever my cows have been fed with green feed, she has always taken a very lively interest to get her share, and has eaten and drank any and everything, the same as other cattle, and having been particularly hearty at all times, does more especially account for her fine growth.

Wilmington, Oct. 4, 1852.

Asa Melvin's Statement.

Gentlemen,—The heifer presented by me to-day, for premium, is of the native breed. She is two years and six months

old. She calved on the 30th of July last, and has been kept through the season in a common pasture, and the feed has been both dry and short. One week in September, commencing with the 21st, we made from her milk nine pounds and one ounce of butter. During that week she was fed with two quarts of meal per day.

Concord, Oct. 6, 1852.

Milch Cows.

The committee on milch cows, respectfully submit the following report:—

That at the cattle show holden at Concord, on the sixth day of October, A. D. 1852, the exhibition of milch cows was unusually large and fine.

So numerous were the rivals for your premiums, that your committee found the time allotted for making examination, for consultation and decision, quite too short to satisfy themselves, much less can they hope to have satisfied all the competitors. We had scarcely time to examine the claims for premiums. Many handsome animals that were offered for exhibition, and some of which might perhaps have been justly entitled to gratuities, at least to a commendatory word, the committee were obliged to pass almost unobserved.

There were eighteen cows offered for premiums—12 native breed; 2 Ayrshire breed; 2 Devon breed; 2 Alderney.

Native Breed. The first premium of $8 was awarded to Nathan Brooks, of Acton. This cow was 7 years old; calved September 2, 1851, and again, September 20, 1852. From September 2, 1851, to August 5, 1852, she gave 3,739 beer quarts of milk—was giving three quarts of milk per day when milking was discontinued, forty-six days before she calved—$7\frac{1}{2}$ quarts of her milk makes a pound of butter. Keeping, in winter, good hay, 1 quart Indian meal and 1 quart oat meal per day; in summer, grass only.

The second premium of $6 was awarded to S. Wheeler, of Framingham. This cow was 7 years old, calved August 12, 1852; the last week in September gave 14 quarts strained milk

per day. Had no extra feed except green corn. This was a very handsome animal.

The third premium of $4 was awarded to Abel Hosmer, of Concord. This cow was 7 years old, calved early in February, 1852. Her milk averaged, in May, 15 quarts per day; in June 17 quarts; in July, 16 quarts; in August, 14 quarts; in September, 13 quarts; in October, 11½ quarts per day. Keeping, hay and grass.

Devon Breed. The first premium of $8 was awarded to Abel Hosmer, of Concord. This cow was 5 years old, calved May 1, 1852. Her milk averaged, in June, 12 quarts per day; in July, 11½ quarts; in August, 10 quarts; in September, 9 quarts per day. Keeping, a pasture on light land.

The other Devon cow was accompanied by no statement.

Ayrshire Breed. The first premium of $8 was awarded to George M. Barrett, of Concord. This cow was 21 years old! calved January 3, 1852. In January and February, her milk averaged seventeen and one-half quarts per day. She then got hurt by the hook of a cow, which nearly dried her up for some months. She now (October) gives five quarts per day. Keeping, in winter, good hay and 1 quart oil meal and 2 quarts shorts per day,—in summer, grass and some corn fodder.

The second premium of $5 was awarded to Converse Smith, of Waltham. This cow was 6 years old, calved about June 1, 1852; gave 15 quarts of milk per day, now (October) gives 12 quarts per day. Has had no grain, or extra keeping, except corn stover.

Alderney Breed. Two animals of this breed were entered so late in the day as scarcely to be seen by the committee. One of them, named "Victoria," owned by Peter Lawson, Esq., of Dracut, was imported in 1851. Her standard quantity of milk in winter, is 8 quarts per day, and was never below 6 quarts per day, until the day on which she calved; on the morning of which day she gave 5 quarts; she calved in May. Her largest quantity per day was 14 quarts; her present average (October) 10¼ quarts per day. Her milk is represented to be very rich, yielding, of butter, one pound and a fraction to 4 quarts of milk. Keeping, in winter, English hay, turnips, and fine feed—in summer, dry pasture, fine feed and cut hay.

There being no premium offered for this breed of cows, a gratuity of $8, equivalent to a first premium, was awarded to Mr. Lawson, for this cow.

The other Alderney cow was not accompanied by the requisite statement.

All which is respectfully submitted.

L. Eaton, *Chairman.*

Concord, Oct. 6, 1852.

Ploughing with Double Teams.

In making our report on ploughing with double teams, time compels us to be very brief, barely announcing the individuals to whom we award premiums; but brief as it is, we are not unmindful of the difficulty we shall encounter if we attempt to please all; the trustees did not offer a *first* premium to *all* who plough, therefore we awarded the premiums offered by the trustees, as we thought right. We award to J. D. Brown, of Concord, the first premium of $10; plough, Ruggles, Nourse & Mason's double sod and subsoil, No. 75. To Daniel Wetherbee, 2d, of Acton, the 2d premium of $7; plough, same. To Gardner Wheeler, of Concord, the third premium of $6; plough, Prouty & Mears's Michigan, No. 95. To A. G. Sheldon, of Wilmington, the fourth premium of $5; plough, Eagle, No. 75, Ruggles, Nourse & Mason's. The committee further recommend a gratuity of $5 to be given to John B. Moore, of Concord, he having ploughed with one yoke of oxen and two horses, for which there was no premium offered; plough, Eagle, No. 20, Ruggles, Nourse & Mason's.

I was authorized by the committee to make a few remarks in connection with this report. The number of teams that ploughed was nine, one consisting of four horses, to which we gave the 2d premium; one of one yoke of oxen and two horses, to which we recommended a gratuity of $5; the rest had two yoke of oxen each, all of which performed their work as though it was not the first time they ever had hold of a plough; and had their been premiums enough to have given to each, we should have done it, and thought that we could

not reject them, as not being worthy. The ground they ploughed was very hard and unequal, the subsoil contained much clay, having never been ploughed more than seven inches deep; but it was required to be ploughed nine, which was done in a manner far surpassing the expectations of the committee, particularly those who used the double sod and subsoil, or Michigan ploughs. It was the opinion of the committee that the ground ploughed with these ploughs, was in a better condition to receive seed, than it could be made with the additional expense of one dollar per acre, (laid out in any way,) on land ploughed with the common plough.

From the spirit and enterprise exhibited by the ploughmen, and the vast number of people assembled, it is evident that a deep interest is felt by all in this most important part of farm operations. We say, then, put in the plough, and where two mould-boards will pulverize and mix the soil best, (as will be the case in all stiff and clay subsoils,) use them, and by going one-half inch deeper each year, we shall shortly make our fields beautify the earth. I am requested by the committee to recommend to the society the propriety of admitting teams to contend for the premiums, (as a double team and under the same restrictions,) consisting of two oxen and two horses, or of two oxen and one horse, as it is well known that but few, comparatively, keep more than one yoke of oxen; therefore a large proportion of the farmers are deprived of the privilege of ploughing with a double team.

For the committee,

J. B. Farmer.

Concord, Oct. 6, 1852.

Ploughing with Single Teams.

The committee on ploughing with single teams, report as follows:—There were eighteen entries; fourteen lands only were ploughed. The work was done remarkably well, considering the nature of the soil and obstructions, viz.: rocks, meadow grass, roots of trees, side hill, &c.

For the committee,

E. Wood, Jr.

Concord, Oct. 6, 1852.

Premiums.

Nathan Brooks, Acton,	1st premium,	. .	$10 00
John Johnson, Framingham,	2d do.	. .	7 00
Joseph A. Smith, Concord,	3d do.	. .	6 00
J. S. Wheeler, Framingham,	4th do.	. .	5 00

PLOUGHING WITH HORSE TEAMS.

The committee on horse teams attended to their duty, and report that there were ten teams which ploughed, and all did their work in an excellent manner; they regret that there were not more premiums to award for so many teams.

Respectfully submitted, for the committee,

DANIEL WETHERBEE, 2d.

CONCORD, Oct. 6, 1852.

Premiums.

Francis Wheeler, Concord,	1st premium,	. .	$10 00
Abner Haven, Framingham,	2d do.	. .	7 00
Harrison Ames, do.	3d do.	. .	6 00
S. M. Thomas, Wayland,	4th do.	. .	5 00

FAT CATTLE.

The committee on fat cattle have attended to that duty and make the following report:—

There were seven entries for the society's premiums, by the following individuals, viz.:—Samuel E. Warren, William L. Howe, and Stephen Morse, of Marlborough, each one yoke; Elbridge Robbins, of Acton, Henry A. Sheldon, of Wilmington, H. A. and S. A. Coburn, of Lowell, and Asa Hodgman, of Chelmsford, each one yoke.

For the committee,

J. S. WETHERBEE.

CONCORD, Oct. 6, 1852.

Premiums.

Stephen Morse, Marlborough,	1st premium,	. .	$8 00
Elbridge Robbins, Acton,	2d do.	. .	6 00
W. L. Howe, Marlborough,	3d do.	. .	4 00

Stephen Morse's Statement.

Gentlemen,—The cattle offered by me for premium are native cattle, and were raised in Berlin, Mass. They are 7 years old and have been owned by me between two and three years. Since I have owned them they have done all the work on my farm, and during last winter they were kept on meadow hay. When I commenced working them in April last, I gave them English hay and four quarts of meal, each, per day, and continued it till they were put to grass, towards the last of May. Since which they have had nothing but grass and green stalks.

Marlborough, Oct. 5, 1852.

William L. Howe's Statement.

Gentlemen,—The oxen which I enter for premium, have had nothing but common pasture feed, except a few stalks at cutting time. They have done the work of the farm, besides working out to the amount of $50, without any grain whatever.

Marlborough, Oct. 5, 1852.

WORCESTER COUNTY AGRICULTURAL SOCIETY.

The Ploughing Match.

The committee on the ploughing match submit the following report:

The plough is the index of the true glory of a nation. Where the husbandman drives his team afield, and the plough upturns the grassy furrow, there are heard the jocund laugh and the merry shout of happy, peaceful hearts; there are seen the lovely arts of peace, the waving fields, the thriving villages, and the blissful homes of an industrious, intelligent people.

The "pomp and pageantry" of war become dim beside the more substantial glories of agriculture. The jeweled sword, the golden epaulette, the dancing plume, fade into nothingness even compared with the unadorned, wood and iron plough.

The gorgeous palace, the massive tower, the magnificent cathedral, and all the surroundings of royal splendor, pale before those simple but sublime and beautiful results which spring up from the furrow of the plough.

When the prophet of old cast his Heaven-enlightened glance into the far future of millennial glory, he adds the crowning touch to his inspired picture of perfect beauty and happiness, by telling us that swords shall be turned into pruning hooks and spears into plough shares. The history of the past, and the prophecy of the future, both declare the inherent and pre-eminent glory of the plough.

Show us the plough of any age or any people, and we will tell you the rank which that age or people holds in the scale of civilization and refinement. When and where the plough is misshapen, uncouth or clumsy, then and there you will find the people void of intelligence, virtue and enterprise. But when and where the plough is elegant, tasteful and in-

genious, then and there you will find the people industrious, enterprising, virtuous, intelligent and thriving.

It is true wisdom and policy then for a people, desirous of promoting their highest good, to encourage the ploughman and improve the plough. And our grateful thanks are due to those wise and far-seeing minds who have, in past generations, and in our own times, sought to advance and improve the art and science of agriculture by those public fairs and trials of skill in the manufacture and use of the plough.

Your committee congratulate the members of the Worcester County Agricultural Society, on the solid good which has grown out of their past efforts to elevate the calling of the husbandman and improve the implements of his toil.

This thirty-fifth anniversary of our annual festival, in the number and beauty of the ploughs, the excellence and thoroughness of the work of the several competitors, has not fallen below any of the past anniversaries.

The number of entries were twenty-five, and your committee, after a careful and impartial investigation, have awarded the following

Premiums.

First premium to Cyrus Gale, of Northborough, Charles P. Potter, ploughman; Ruggles, Nourse, Mason & Co.'s Eagle plough, No. 73½. Oxen five years old; work done in 27 minutes, ...	$10 00
Second premium to George P. Stockwell, of Sutton, himself ploughman; Martin's Eagle plough, No. 50. Oxen five years old; work done in 48 minutes, .	9 00
Third premium to Loren Carpenter, of Charlton, himself ploughman; Ruggles, Nourse, Mason & Co.'s Eagle plough, No. 73½. Oxen five years old; work done in 40 minutes, ...	8 00
Fourth premium to Silas Bailey, of Boylston, Nathan B. Read ploughman; Martin's Eagle plough, No. 50. Oxen four years old; work done in 33 minutes,	7 00
Fifth premium to T. J. Wheelock, of Grafton, himself ploughman; Ruggles, Nourse, Mason & Co.'s Eagle plough, No. 73½. Oxen six years old; work done in 49 minutes, ...	6 00

Sixth premium to Calvin D. Nourse, of Grafton, Henry T. Wheelock, 14 years old, ploughman; Ruggles, Nourse, Mason & Co.'s Deep Tiller plough, No. 73½. Oxen five years old; work done in 45 minutes, . $5 00

Seventh premium to Leonard S. Wheelock, of Grafton, himself ploughman; Ruggles, Nourse, Mason & Co.'s Eagle plough, No. 73½. Oxen six years old; work done in 42 minutes, . . . 4 00

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Otis Adams, *Chairman.*

Working Oxen.

The committee on working oxen have attended to the duty assigned them, and respectfully report: —

That the whole number of teams entered were thirty-three; four of which were for exhibition only, and one of the number did not appear at the trial of draught, leaving twenty-eight as competitors for the society's premiums.

The trial of strength was made in the usual mode, and consisted in drawing a loaded cart, which, with its contents, weighed 4,000 pounds, up an elevation selected for the purpose.

The committee are happy to state, as their unanimous opinion, that a finer display of teams was never made at any of the previous exhibitions of this society. The cattle were in good condition, gave evidence of admirable training, and performed to the entire satisfaction of the committee; and in making their award, the only difficulty they encountered was to determine the comparative excellence of each, when all were so meritorious.

After as careful a consideration as the circumstances of the occasion would permit, they have with great unanimity agreed upon the following awards:

First premium to Mrs. J. L. Sibley, Sutton, . . $10 00
Second premium to Henry J. Reed, Princeton, . 8 00
Third premium to Royal Draper, Sturbridge, . . 7 00
Fourth premium to Joseph P. Reed, Princeton, . 6 00

Fifth premium to Loren Carpenter, Sturbridge,	$5 00
Sixth premium to Leonard Wheelock, Grafton,	4 00
Seventh premium to Artemas J. Bullard, Worcester,	3 00
The premium to the best driver is awarded to Henry J. Reed, of Princeton,	3 00

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Amasa Walker, *Chairman.*

Fat Cattle.

The committee on fat cattle having attended to the duty assigned to them, respectfully submit their report:—

Ten fat oxen and six fat cows were offered this year for premiums, and two fat oxen and one fat cow for exhibition.

The committee, being extremely desirous of doing impartial justice in awarding the few premiums at their disposal, extended their examination of the cattle, and deliberated upon the claims of the different competitors for premiums till they have only time briefly and without comment to state the result of their labors.

They awarded the first premium of $12 to Harrison Bacon, of Barre, for his red ox, four years old, weighing 2,200 lbs., one-half Durham.

The second premium of $10 to Pliny P. Gould, of Phillipston, for his brown ox, native breed, weighing 2,300 lbs.

The third premium of $8 to Seth Wyman, of Shrewsbury, for his red ox, native breed, weighing 2,352 lbs., five years old.

The fourth premium of $5 to Harrison Bacon, of Barre, for his red ox, half Durham, four years old, and weighing 2,160 lbs.

To Chandler Taft, of Spencer, the first premium of $10 for his fat cow, Durham breed, eighteen years old, weighing 1,575 lbs.

To Jacob W. Watson, of Princeton, the second premium of $6 for his cow, native breed, ten years old, weighing 1,775 lbs.

The third premium of $4 to Nathan Rice, of Oakham, for his cow, one-half Durham breed, and weighing 1,380 lbs.

One ox of Seth Wyman, of Shrewsbury, and one of Charles H. Newton, of Shrewsbury, entered for exhibition merely,

added much to the show of fat cattle, and were well worthy of premiums, could such have been awarded them.

All of which is respectfully submitted in behalf of the committee,

JOHN W. WETHERELL, *Chairman.*

SHEEP.

The committee on sheep have had but little service to perform. The society having very properly ceased to encourage the raising of fine wool, our farmers seem not to have yet provided themselves with those breeds best adapted to the growth of mutton.

Four bucks were entered for premium—one by Joseph Rice, of Shrewsbury, a yearling, of the Dishley breed, and bearing strong marks of his true character.

One by Thomas R. Foster, of Holden, a yearling, of our common long woolled breeds.

One by Seth Wyman of Shrewsbury, a yearling which had the appearance of having a little of the Dishley blood in him.

One by N. B. Stone of Charlton, a two years' old of mixed blood, probably originating from the Merino, but retaining very little of the appearance of that breed.

The committee awarded the first premium of $5 to Joseph Rice; and the second premium of $2 to N. B. Stone.

Four ewes were entered for premiums by Seth Wyman of Shrewsbury, and four by Ebenezer Lincoln, of Grafton.

Three of Mr. Lincoln's sheep were worthy of a premium, but if the fourth had been equally good your committee would not have been justified in awarding him a premium, by reason of their not having been taken from a flock of ten or more.

This left Mr. Wyman's ewes without competition, and the committee did not think them of such superior quality or value as to entitle their owner to a premium, and under the rules of the society did not award any.

Mr. Wyman exhibited five other ewes with handsome lambs but a few weeks old. Mr. Wyman states that these were the

second bearing of the present year, all his ewes having brought lambs late in the winter or early in the spring.

Rejoice Newton, *Chairman.*

Swine.

The committee on swine, having attended to the duty assigned to them, beg leave to report:—

That though the company was few in numbers, yet it was very select in character, nothing but the very aristocracy of pigdom being represented within the pens. Your committee, having congratulated themselves upon the profound wisdom of their body, proceeded to pay their congratulation to their assembled brethren. And first upon the list stands the beautiful boar of Lyman Pierce of West Boylston, so eminently distinguished that your committee awarded him the first premium of $5.

Next, the boar of John D. Hudson of Oxford, the second premium of $3.

To Andrew J. Waite, of Worcester, "for the best breeding sow not less than two years old," the first premium of $10, and your committee are sorry they cannot wait to tell you all the weighty matters appertaining to this distinguished lady.

To James F. Thorndike of Grafton, for his "Susanna," the second premium of $6.

For the best breeding sow not less than one year old, to Andrew J. Waite, of Worcester, the first premium of $6. She being a daughter of the lady mentioned above, and bidding fair to rival her mother in matronly charms.

For the next best sow not less than one year old, to John D. Lovell of West Boylston, a premium of $4.

For the next best, to James F. Thorndike, of Grafton, a premium of $2. Many of your committee were quite in love with this lady, whether from the rosy hue of her complexion, or from her fair proportions, the chairman could not judge; mere beauty being a secondary consideration to a good "help meat," (in their opinion).

The belle of the pigs was obliged to yield the palm to those who brought a larger portion though perhaps less of beauty.

For the best weaned pigs, not less than four in number, the first premium of $5 was awarded to John Goodwin of Worcester, for his "happy family."

For the next best, to John D. Hudson, of Oxford, a premium of $3.

For the next best, to Whipple W. Patch, of Worcester, for his beautiful specimen of Patch work, a premium of $2.

Samuel Hathaway, *Chairman.*

Steers of Three Years Old.

The committee on steers of three years old, have attended to the duty assigned to them, and report that they examined fifteen yoke that were entered for premiums, all of which were worthy of exhibition in Worcester county; they were all very fine steers, and if they failed in anything it was in their equality of match in several pairs. There were also two yoke offered for exhibition only, (having been raised out of the State) that did credit to the show.

The committee, after a very careful examination, came to the following result, and award the first premium of $8 to Elijah Bigelow, Jr., of Douglas, for his half Devon steers, weighing 2,675.

To Anson Warren of Westboro', for his half Durham steers, weighing 2,820, the second premium of $7.

To Levi L. Chase of Sutton, for his native steers, weighing 3,020, the third premium of $6.

To Silas Bailey, of Boylston, for his Alderney steers, weighing 2,670, the fourth premium of $5.

To Jacob W. Watson, of Princeton, for his half Holderness steers, weighing 2,575, the fifth premium of $3.

To David Carpenter, of Charlton, for his native steers, not weighed, the sixth premium of $2.

All of which is respectfully submitted,

Salem Towne, *Chairman.*

Steers under Three Years Old.

The committee on steers under three years old, have attended to the duty assigned them, and submit the following report:

To Simon Carpenter, of Charlton, for his half Durham steers, two years old, the first premium of $6.

To Russell A. Davis, of Oxford, for his native steers, two years old, the second premium of $5.

To Asa Rice, of Worcester, for his part Devon steers, the third premium of $4.

And on yearling steers, your committee have awarded to Harrison Bacon, of Barre, the first premium of $5 for his three-quarter Durham steers, one year and six months old.

To Alpheus Davis, of Charlton, the second premium of $4 for his yoke of half Durham steers.

To Silas Bailey, of Boylston, the third premium of $3. In awarding this last premium, the committee were divided in opinion in regard to the merits of the steers of Mr. Bailey and Mr. Asa Rice of Worcester, who had a yoke of very fine ones. The opinion of the chairman was called for, and the premium given to Mr. Bailey.

And upon steer calves, your committee have awarded the first premium of $3 to Samuel Sawyer, of Sterling, for his yoke of twin steer calves.

To Jacob W. Watson, of Princeton, we award the second premium of $2, for his yoke of steer calves.

In submitting this report, your committee would speak in terms of high commendation of all the animals that came within their province to pass upon, and would gladly have awarded further premiums if the trustees had furnished the means.

All of which is respectfully submitted for the committee.

Joseph Bruce, *Chairman.*

Heifers not less than Two Years Old.

The committee on heifers not less than two years old, have attended to the duty assigned to them, and submit the following report:—

Of three-year olds there was but four entries, all fine animals. The one owned by Jacob W. Watson, was a very superior animal.

The three premiums on three-year old heifers were awarded as follows:

First premium	to Jacob W. Watson, Princeton,	.	$7 00
Second "	to William Eaton, Worcester,	.	6 00
Third "	to William Eames, "	.	4 00

In awarding the three premiums on two-year olds, the duty was extremely difficult. We found twenty-four entries of this class, all deserving of praise. Of those for which we had no premiums, we noticed with admiration two half-blood Devon, owned by Nathaniel Dodge, of Sutton, from the society's bull, Roebuck, showing strongly the marks of that beautiful breed of cattle; one owned by John Brooks, Princeton; one by Sylvanus Sears, of Worcester; one by Samuel A. Cushing, of Shrewsbury; all fine animals, and would do credit to any stock.

The three premiums on two-year old heifers were awarded as follows:

First premium	to Gordon Woodward, Leicester,	.	$7 00
Second "	to Jacob W. Watson, Princeton,	.	6 00
Third "	to William S. Lincoln, Worcester,	.	4 00

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Henry R. Keith, *Chairman.*

Heifers less than Two Years Old.

Your committee, having attended to their duty, ask leave to submit the following report:—

This class of animals was very numerous, and the exhibition showed a growing interest in this county, for raising the handsomest, and at the same time the most profitable stock.

There were thirty-four animals entered for exhibition—consisting of 9 half Devon, 16 half Ayrshire, 4 Natives, 1 Spanish, 5 quarter Ayrshire, and 1 Devon. Of the Ayrshire, Hon. John

Brooks, of Princeton, entered eight. The half Devon combines most of the superior qualities, and we were pleased to find that this kind of stock was such a general favorite among our farmers.

The committee were very unanimous in the opinion that the first premium of $8 for the best one-year old heifer should be awarded to Harrison Bacon, of Barre, for his half Durham heifer.

The second premium of $6 was awarded to John D. Lovell, of West Boylston, for his half Devon heifer.

The third premium of $5 was awarded to Jacob W. Watson, of Princeton, for his half Ayrshire heifer.

The premium of $3 for the best calf not more than eight months old, was awarded to Harrison Bacon, of Barre, for his half Durham calf, 4½ months old.

There was no entry of calves of not less than five in number, but there was an entry of four calves, half Ayrshire, by Hon. John Brooks, which were four months old and taken from the cow when three days old, which your committee think justly entitles him to a premium for the best lot of calves, and they accordingly recommend that the premium of $5 be awarded to him for his fine specimen of stock.

Ward N. Boylston, of Princeton, exhibited a beautiful full blood Devon heifer, one year old, weighing 695 pounds, but it did not bear sufficient marks, as compared with some other animals, to entitle him to the premium.

Nathaniel Dodge, of Sutton, exhibited three heifers, half Devon, which excelled, in good and coquetish looks, any others on the ground—they were the decided belles of the pens.

The Spanish calf, 5 months old, exhibited by Thomas Marshall, of Worcester, was a novel specimen, both in form and color, and as the "prima donna" of the day, attracted much attention.

There were two pairs of twin calves, very good looking and modest, and although they expected *something*, your committee can do nothing more than recommend their owners to keep them as stock for Barnum's Museum.

The stock of calves generally, did not look so well as might have been expected, if the heat of summer had not deprived them of the sweetest and best feed, which is so very desirable for young animals.

As a whole, your committee were very much gratified with the "rising generation" intrusted to their examination, and notwithstanding the feminine youthfulness of some, they all gave evidence of good training, and displayed those docile virtues which are most becoming in *young cows*.

All of which is respectfully submitted,

E. B. Stoddard, *Chairman.*

Bulls under One Year Old.

Report of the committee on bulls under one year old, (familiarly called bull calves.)

The subject is not an inspiring one, and the committee beg leave to confine themselves entirely to statistics.

As only seven animals were entered for exhibition, the duties of the committee were light. They have no hesitation in awarding the only premium within their judicature to Ezra Beaman, of West Boylston, for a bull calf, part Devon, raised by himself, nine months old, weighing one thousand pounds. The committee are of the opinion that the other animals regularly entered are not deserving of particular commendation.

Two very fine bull calves, one three months and 28 days old, weighing 470 pounds, owned by Lambert Lamson, of Boylston; and one 13 weeks and four days old, weighing 370 pounds, owned by Nathan Handy, of Grafton, would be entitled to most honorable notice, but for a regulation of this society directing that no mention shall be made of animals not entered in season.

The committee beg leave to call attention to the last paragraph as a fair specimen of an Irish Bull.

All of which is respectfully submitted,

F. Wayland, Jr., *Chairman.*

Milch Cows.

The whole number of animals presented for premium was six. Of these Mr. Jabez Rice, of Worcester, presented three; Mr. Samuel Ellsworth, of Barre, one; Mr. E. T. Rand, of

Shrewsbury, one; and Mr. William Eames, of Worcester, one.

The various premiums offered by the society, your committee would distribute as follows:

To Mr. Samuel Ellsworth, of Barre, the first premium in the first class, $25, for the best dairy of five cows, from a stock of not less than five. Mr. Ellsworth's stock was represented by his gray, half Durham cow, Georgianna, five years old. She shows marks of very superior milking qualities, and the certificate of her owner shows, that during the first ten days of June, she gave 510 pounds of milk, or an average of 51 pounds a day, and during the first ten days of September, she gave 333 pounds, or an average of $33\frac{1}{3}$ pounds a day. This was the only cow present of his stock. The trial of the others gave the following results. The second cow, Red Rose, eight years old, half Durham, on the first trial gave $418\frac{3}{4}$ pounds of milk, or $41\frac{3}{4}$ pounds a day, and on the second trial, $287\frac{1}{2}$ pounds, or $28\frac{3}{4}$ pounds a day. The third cow, Barre Star, eight years old, half Durham, on the first trial gave $414\frac{3}{4}$ pounds of milk, or an average of $41\frac{1}{2}$ pounds a day, and on the second, $266\frac{3}{4}$ pounds, an average of $26\frac{1}{2}$ pounds a day. The fourth cow, Gray Heifer, five years old, half Durham, on the first trial gave $359\frac{1}{4}$ pounds of milk, or an average of 36 pounds a day nearly, and on the second, $230\frac{3}{4}$ pounds, an average of 23 pounds a day. The fifth cow, Ayrshire, five years old, pure Ayrshire, on the first trial, gave $382\frac{1}{2}$ pounds of milk, an average of 38 pounds a day, and on the second, 221 pounds, an average of 22 pounds a day. Mr. Ellsworth's certificate was duly filled out, except in the item of live weight. No scales were to be found within five miles of his house, and in view of the difficulties of the case, and the trouble and expense to which he has been subjected in producing the weight of two, the committee think that the society ought, for the weight of the rest, to take the estimate of the two best men that could be found in his precinct.

To Mr. Jabez Rice, of Worcester, a premium of $15, being the first premium in the second class, for the best dairy of three cows, from a stock of not less than five. All of Mr. Rice's cows were present in the pens. The first cow, ten years

old, native breed, on the first ten days of June gave 309¾ pounds of milk, or 31 pounds a day on the average; and on the first ten days of September, 169 pounds, or 18 pounds a day. The second cow, seven years old, native breed, on the first trial gave 288 pounds of milk, or 28¾ pounds a day; and on the second, 171½ pounds, or 17 pounds a day. The third cow, four years old, one-eighth Devon, gave, on the first trial, 255 pounds of milk, or 25½ pounds a day, and on the second trial, 130 pounds, or 13 pounds a day. Mr. Rice's certificate was all duly filled out, according to the present regulations of the society.

To Mr. E. T. Rand, of Shrewsbury, $8, the first premium in the fourth class, for the best single cow, kept alone or with others, for his beautiful red, pure Durham cow, four years old. The certificate of her owner shows, that on the first ten days of June, she gave an average of 37 pounds of milk a day, and on the first ten days of September, an average of 24 pounds.

To Mr. William Eames, of Worcester, $5, being the second premium in the fourth class, for his deep red, native cow, five years old. The certificate of her owner states, that in the June trial, she gave 369 pounds of milk, or 37 pounds a day, and in the September trial, 235 pounds, or 23½ pounds a day.

Mr. Ebenezer Lincoln, of Grafton, presented a very fine young cow, four years old, one-half Durham breed, but without a certificate. Mr. L. states that he sells his milk at the door, and that his cow has averaged 14 quarts a day for eight months. The committee, therefore, would recommend a gratuity of four dollars to Mr. Lincoln, for his cow.

Among three cows presented by Mr. Rufus Hastings of Sterling, without a certificate, your committee noticed favorably, a spotted one-half Devon cow, with a calf by her side, and would recommend to her a gratuity of two dollars.

Among the cows presented for exhibition only, the committee would notice first, and far above all others at the exhibition, the full-blooded, imported Ayrshire cow, presented by William B. Fox, Esq., of this city. This cow, the committee, to a man, pronounced one of the very finest animals they had ever seen, both as regards purity of blood, size, beauty, and marks of the deepest and richest milking qualities, and the thanks of the

committee, and of the society, are presented to Mr. Fox, for the deep interest he takes in the welfare of the society, which has prompted him to send her, at some risk and trouble, to grace our annual festival.

Col. James Estabrook, of this city, also presented a very beautiful native cow, seven years old, with a calf by her side, for exhibition. This cow, as a most beautiful specimen of our native breed, added much to this department of the exhibition, and her presence here showed a liberality and interest in the cause of agriculture, on the part of her owner, highly deserving the thanks of your committee.

A beautiful native cow, eight years old, was presented for exhibition by Mr. John C. Ripley, which your committee viewed with pride, as a fine specimen of our valuable native stock, and thank Mr. Ripley for allowing her to be present.

Mr. Thomas Marshall, of Worcester, presented a cow of Spanish breed, which though small and thin, showed marks of a good milker, and under good flesh, would no doubt, be a good looking, profitable cow.

All of which is respectfully submitted,

R. Woodward, *Chairman.*

Note.—The report of the committee on milch cows was, by a vote of the society, on the day of the show, referred to the trustees for final adjudication. In that body the matter was referred to a sub-committee, which committee reported, that inasmuch as no individual competitor, save Jabez Rice, had complied with the rules of the society, in their opinion the committee on premiums exceeded their power in making their awards; and however much it was to be regretted that the competitors should be deprived of a compensation, for the time and trouble they had bestowed in making the trial required; still, as with a full knowledge of the rules, they had chosen not to conform to them, there seemed to be no reason why they should receive the favorable consideration of the society.

It should be remembered by all, that the society offer their premiums, payable upon compliance with all the conditions imposed by the society; and not, as seems sometimes to be

imagined, payable upon the performance of such portions of them as a competitor may himself approve.

The report was adopted, and all premiums and gratuities awarded by the committee, save that to Jabez Rice, were directed to be withheld by the treasurer.

WM. S. LINCOLN, *Recording Sec'y.*

William S. Lincoln's Statement.

Dairy of two two years, and one three years old heifers, and four cows; three of them grade Ayrshires, raised by himself; turned to pasture May 20th; fed corn fodder twice a day after middle of July.

No. 1, twelve years old, calved April 5th; yielded in the first ten days of June, 318 lbs. 15 oz. milk; first ten days of September, 231 lbs. 11½ oz.

No. 2, nine years old, calved April 4th; yielded, in the first ten days of June, 271 lbs. 13 oz. milk. Dried July 5th, and fatted.

No. 3, six years old, calved April 6th; yielded, in the first ten days of June, 371 lbs. 1½ oz. milk; first ten days of September, 231 lbs. 14 oz.

No. 4, five years old, calved May 14th; yielded, in the first ten days of June, 300 lbs. 12½ oz. milk; first ten days of September, 204 lbs. 10½ oz.

No. 5 calved July 24th; yielded, in the first ten days of September, 154 lbs. 1 oz. milk. Injured about time of calving so much as to be fatting.

No. 6, three years old, calved in May; yielded, in the first ten days of June, 261 lbs. 3½ oz. milk; first ten days of September, 137 lbs. 2 oz.

No. 7, two years old, calved July 3d; yielded, in the first ten days of September, 166 lbs. 1 oz. milk.

WORCESTER.

Jabez Rice's Statement.

Dairy consists of seven cows, one three-year, and two two-year old heifers, raised by himself; turned to pasture May 1st; fed corn fodder since September 1st.

No. 1, yielded in the first ten days of June, 309 lbs. 12 oz. milk.
" " " " Sept. 178 " 12 " "
No. 2, " " " " June, 288 " " "
" " " " Sept. 171 " " "
No. 3, " " " " June, 254 " 12 " "
" " " " Sept. 130 " " "

Has kept three old hogs and six pigs; feeding, besides refuse of dairy and wash of house, 20 bushels cob meal; since May 1st, sold swine to amount of $81.

Made, since turning to pasture, to September 10th, 917¾ lbs. butter, 266 lbs. two meal cheese, and sold 644 quarts milk.

WORCESTER.

E. T. Rand's Statement.

Keeps one cow, Durham breed; calved April 26th; turned to pasture May 15th. Yield, first nine days of June, 330 lbs. milk, producing 15 lbs. 12 oz. butter; first nine days of September, 219 lbs. milk, producing 12 lbs. butter.

SHREWSBURY.

L. B. Hapgood's Statement.

Dairy consists of ten cows, three of which are three years old; seven of the animals were raised by myself; breed one-quarter Durham; have sold ten calves, at six weeks old, for $63 14; fed in August, 25 bushels shorts; weight of butter from dairy, between June 1st and September 10th, 733 lbs.; have kept four hogs through the season; estimated dead weight, September 10th, 1,100 lbs.; five pigs on hand, worth $35; sold 17 pigs at six weeks old, for $44 25.

SHREWSBURY.

Samuel Ellsworth's Statement.

Dairy consists of sixteen cows, of which one is three years, and two are two years old; most of the animals raised by himself; turned to pasture 26th May; the pasturing was "first rate," none better. The five cows offered for premium, were fed two quarts corn and barley meal daily, for the time of trial.

No. 1, yielded during first ten days of June, 510 lbs. 8 oz. milk.
" " " " Sept., 333 " "

No. 2, yielded during first ten days of June, 418 lbs. 12 oz. milk.
" " " " Sept., 287 " 8 " "
No. 3, " " " " June, 413 " 12 " "
" " " " Sept., 266 " 12 " "
No. 4, " " " " June, 359 " 4 " "
" " " " Sept., 230 " 12 " "
No. 5, " " " " June, 382 " 8 " "
" " " " Sept., 221 " " "

June 5th, the milk from these cows was churned, and yielded 8 lbs. 4 oz. butter; and from the milk of one day in September, was made 5 lbs. 4 oz butter. On the 9th June, from these cows was made 28 lbs. of curd, fitted for the press.

Barre.

Poultry.

The committee, after endeavoring to settle in their own minds as well as they could do the claims of many competitors for the few prizes offered by the society, are agreed in recommending the following premiums—premising at the same time that they are not sure but injustice has been done in some instances, owing to the difficulty of deciding where the merits are so nearly balanced.

First premium, $5, to Eaton & Mills of Worcester, for seven fowls of the Black Spanish breed.

Second premium, $4, to Ezra Sawyer, of Sterling, for seven White Shanghaies.

Third premium, $3, to Horace Jewett, of Sterling, for Buff Shanghaies.

Fourth premium, $2, to Frederick Eaton, of Worcester, for six Black Spanish and four Shanghaies.

Fifth premium, $1, to Jonathan Rice, of Worcester, twelve Shanghaies.

Charles Jewett, of Millbury, exhibited thirty-two fowls, a cross breed of the Buff and Black Shanghaies, decidedly the best specimens offered. He would have been entitled to the first premium if they had been entered according to the rules of the society.

The committee recommend that a copy of Coleman's "Agricultural Tour in Europe" be awarded to Mr. Jewett, as a gratuity, for the service he is rendering the community by his endeavors to ascertain and introduce the best varieties of domestic fowls.

Thomas Drew, of Worcester, was the owner of the only ducks offered for premium. They were of the half Poland breed, and in the opinion of the committee he is entitled to a premium of $3.

* * * * * * * *

The committee are of opinion that the raising of poultry for the market is not claiming that attention from the farmer which its importance demands. In the city of Boston, alone, in 1848, the sales of poultry amounted to $1,000,000, and that of eggs to nearly or quite the same. The demand will increase with the population, and there is no danger of overstocking the market. If farmers and others would have suitable enclosures for fowls during the winter, and also while their seeds are exposed to their depredations, and at other times would allow them the free range of their premises, they would nearly pay for such extra care by their destruction of troublesome insects.

By order of the committee,

ANTHONY CHASE, *Chairman.*

CHEESE.

Your committee considered themselves very fortunate in finding most of their members punctual in their attendance. A single vacancy, occasioned by the absence of Mrs. Tidd, of New Braintree, was filled by the unanimous selection of Mrs. David Lee, of Barre,—a very successful cheese-maker, and unquestionably a good committee-*man.* The committee, or the male portion thereof, at all events, cannot speak too highly of the arrangement, by which the ladies are associated with them on this important subject. They have derived great "aid and comfort" from their superior judgment in such matters, and trust that no competitor whatever, will for a moment question the decisions of such impartial and unerring judges.

"On this subject," in the language of the orator at your first anniversary, (our honored Ex-Gov. Lincoln,) "the ladies should indeed be the helpers of our joy. Our societies, so far as may be within the scope of their operations, should solicit that countenance, which is more than the magical stores of genius and science can lavish,—commerce or the coffers of wealth bestow."

Upon the importance of the subject before the committee, a word or two may be desirable. The manufacture of cheese is undoubtedly an invention of great antiquity. It is repeatedly referred to in the Old Testament,—the ancient books of Job and Samuel,—and is frequently mentioned in the works of Diodorus Siculus, of Strabo, and other Latin authors. Early in the Christian era, the Britons were celebrated for its manufacture, and England has preserved that reputation to the present day. On the continent, the German and Alpine cheeses made from the milk of the cow and the sheep, were held in high esteem, as early as the second century. England, however, stands unrivalled for those products, in more modern times. In the county of Cheshire alone, it has been estimated that there are annually produced over 15,000 tons of cheese; while in the county of Warwick, which is more favorably located for its market, over 30,000 tons are annually sent to the cities of Birmingham and London. We are all aware, too, of the famous qualities for which English cheeses are remarkable. The celebrated Stilton cheese, manufactured in Leicestershire, is regarded as one of the richest and most highly flavored. It is not considered fit for cutting until two years of age, and is generally unsaleable unless it be decayed, blue, and moist in appearance. In Scotland the Dunlop cheese is considered one of their best varieties, but otherwise, that country is not particularly celebrated in its manufacture. Modern Swiss cheese, especially that denominated Gruyere, is held in high estimation by many; though your chairman, from a somewhat recent and odorous acquaintance with one specimen of Swiss cheese, begs leave to differ in taste with its numerous admirers.

In regard to American manufactures of this important article, I need not claim your attention. At the last exhibition of this society, our farmers had an opportunity of examining spe-

cimens of cheese from N. York, and we may hope for similar favors from other States, at our future anniversaries. Much good may result, from a comparison of our own products, with those of other States and countries.

From our own county of Worcester, your committee were pleased to find an excellent collection of cheeses, in quality certainly, if not in quantity. They would, however, urge upon the farmers of the county, and more particularly upon their wives and daughters, who are or should be interested in this matter, the duty of sending specimens of their skill from all sections of the county, in order that a larger number of dairies may be represented, and all competitors be benefitted by the comparison. Your committee are induced to allude to this subject, as it is a well known fact, that a majority of the entries are almost uniformly from the somewhat celebrated town of New Braintree. It is not a little singular, that the first and only premium for cheese at the first anniversary of this society, thirty-three years ago, was awarded to "Messrs. John & Daniel Hunter, of New Braintree," and that, at nearly all, if not all, their exhibitions, a majority of premiums have been bestowed on citizens of that town. It is an honor to that place, but there is no reason why other towns should not emulate their success.

Upon examining the list of entries submitted to their inspection, your committee found in the whole, thirteen lots of cheese. According to the rules of the society, each lot consisted of not less than 100 lbs. of the manufacture of the same person, and all new cheese exhibited, was certified to have been made in the month of June. The entries of *new* cheese were as follows :—

Lot No. 1,	Hiram S. Harwood, of Barre,	.	7	cheeses,	108 lbs.
" 2,	Jason Wilson, of Spencer,	. .	6	"	115 "
" 3,	Samuel Ellsworth, of Barre,	.	6	"	118 "
" 4,	L. Converse, of N. Braintree,	.	5	"	125 "
" 5,	Asel L. Clark, "	.	5	"	106 "
" 6,	Moses Thompson, "	.	5	"	110 "
" 7,	Job Rainger, "	.	6	"	119 "
" 8,	Charles Wilcox, "	.	5	"	105 "
" 9,	Arba Bridges, of Warren,	. .	4	"	100 "
" 10,	John Washburn, of Barre,	. .	4	"	126 "

Of the *old* cheese, there were three entries:—

Lot No. 1, Lorenzo Converse, N. Braintree, 6 cheeses, 142 lbs.
" 2, Asel L. Clark, " 4 " 107 "
" 3, Charles Wilcox, " 5 " 105 "

After a careful and impartial examination of the different lots exhibited, your committee decided upon the following distribution of premiums:

For new cheese, they awarded the

1st premium of $8, for lot No. 7, to Job Rainger, N. Braintree.
2d " of 6, " 9, to Arba Bridges, Warren.
3d " of 5, " 5, to Asel L. Clark, N. Braintree.
4th " of 4, " 8, to Charles Wilcox, "
5th " of 2, " 10, to John Washburn, Barre.

For old cheese, they awarded as follows:

1st premium of $6, for lot No. 2, to Asel L. Clark, N. Braintree.
2d " of 4, " 1, to Lorenzo Converse, "

In conclusion, the committee would state, that their preference for one lot above another, was in several instances very slight, and that in these cases, they were guided either by the superior flavor, or by the general evenness of the cheese. They would further add, that in the plan adopted by the committee, the names of the competitors were unknown to them, until after the decisions were made.

All which is respectfully submitted,

Wm. S. Barton, *Chairman.*

Butter.

Mr. President, and gentlemen of the society: The committee appointed to inspect the butter offered for exhibition at this our annual festive gathering, have carefully attended to the pleasing duty assigned to them, and through me, their chairman, submit the following report:—

The original committee presented themselves, to a man, with the single exception of Mr. Emmons Twichell, of Brookfield; he was absent, and we pressed Mr. Joel Flagg, of Worcester,

into our service, and with him, applied ourselves to the duties devolving upon us.

The butter presented was less in quantity than on some previous occasions, and consisted of fourteen lots entered for premium, and one for exhibition.

Of those who entered butter for premium, six had failed to comply with the regulations of the society, and of course their claims were passed over in silence. To the remaining eight lots the committee proceeded to apply every test known to civilized butter judges—they smelled and tasted the butter, viewed carefully its color, and then, while the chairman stood aloof, placed their heads together and turned out the following premiums:—

To Mr. Silas Bailey, of Boylston, they award the first premium—a piece of silver plate, with an appropriate inscription. For an inscription, the committee suggest the following: Woman's rights—to win the prize; husband's rights—to take it.

The second premium, of $6, Mr. L. B. Hapgood, of Shrewsbury, can have by calling for it.

The third premium, of $4, we assigned to Mr. Amos F. Knights, of West Boylston; while the butter presented by Mr. Willard Allen, of Holden, was considered worthy of the fourth premium, of $3.

The fifth premium we did not think fairly earned by any competitor and consequently direct the treasurer to retain the same for the use of the society.

Thus having disposed of all the funds intrusted to their tender keeping, the committee lost that anxious and important look which had set so long upon their countenances, and, unbending a little, they desired their chairman to sound one note in praise of lot No. 14, offered by Mr. William S. Lincoln, of Worcester, of 14 pounds. It was certainly a most beautiful lot of butter, and had the quantity come up to the rules, viz., twenty pounds, could not have failed to secure a premium. Mr. Prentiss, of Auburn, presented a lot of eighteen pounds, too late for entry, but the committee say to him with pleasure, that with one exception, they saw no finer butter on the tables. A trifle less salt, and strict compliance with the rules, would have secured him one of the highest premiums.

George S. Taft, *Chairman.*

NOTE.—I subjoin, as matter of interest, a condensed statement of the produce of the dairies of the several competitors. Whence this wide differenee in the amount of return of this branch of husbandry? Is it from superiority in the animals? from the better quality of pasture? or from greater skill or better management in the dairy? or from all combined? The inquiry becomes important; since the difference in the yield per head is suffieient to render the business barely remunerative in the hands of one, highly profitable under the management of another.

JABEZ RICE—Dairy of 7 cows and 1 three-year old heifer, besides 2 two years old since July 3d—made, between "June 1st and September 10th," - - - - - - - - 717 lbs. Butter.

A. CROSBY—Dairy of from 7 to 9 cows—made, between "June 1st and September 22d," - - - - - - - - 575 " "

M. J. MAYNARD—Dairy of 7 cows and 1 two years old heifer—made, since June 1st, - - - - - - - - 569 " "

A. F. KNIGHT—Dairy of 9 cows and 2 heifers—made, from June 1st to September 10th, - - - - - - - - 642 " "

S. BAILEY—Dairy of 6 cows and 2 three years old heifers—made, from June 1st to September 10th, - - - - - 531 " "
and cheese for use of family.

N. STONE—Dairy of 7 cows—made, from June 1st to September 10th, 500 " "

S. SEVERY—Dairy of 4 cows—made, from June 1st to September 10th, 351 " "

WILLIAM EAMES—Dairy of 3 cows—made from June 1st to September 10th, - - - - - - - - - 218 " "
and sold the night's milk from July 20 to September 1.

W. ALLEN—Dairy of 6 cows; of these one did not calve till June 14th, and another July 20th—made, from June 1st to September 10th, 458 " "

L. B. HAPGOOD—Dairy of 10 cows—made, from June 1st to September 10th, - - - - - - - - - - 733 " "

H. BAILEY—Dairy of 6 cows—made, from June 10th to September 10th, 300 lbs. cheese, and - - - - - - - 400 " "

W. S. LINCOLN—Dairy of 4 cows, 1 three years old and 2 two years old heifers—made, from June 1st to September 10th, - - 635 " "
and sold cream to amount of $5.

W. S. L., *Secretary.*

BULLS.

The committee on bulls of one year old and upwards, submit the following report:

There was assigned to your committee the duty which has heretofore been divided between two committees, to wit: to award the premiums on bulls of two years old and upwards, and under two years of age; making two classes, and two sets of premiums.

The entries of bulls of two years and upwards, were as follows:

Worcester Agricultural Society, Ayrshire, six years and five months old.

Worcester Agricultural Society, North Devon, five years and six months old.

Silas Bailey, Boylston, seven-eighths Devon and one-eighth Durham, two years old.

John D. Lovell, West Boylston, three-fourths Devon and one-fourth Durham, four years old.

Marshall J. Maynard, Northborough, Durham, three years and two months old.

S. Chadwick, Worcester, three-fourths Durham, five years and three months old.

Calvin Sanford, Barre, Durham, seven years old.

Samuel Ellsworth, Barre, Durham, four years old.

Henry J. Reed, Princeton, seven-eighths Devon, two years old.

Nathan B. Reed, Boylston, seven-eighths Devon, two years old.

Andrew March, Millbury, seven-eighths Durham, three years old.

John McLellan, Sutton, one-half Devon, two and a half years old.

Russell A. Davis, Oxford, half Devon, two years old.

Asa Holbrook, Holden, half Devon half Durham, three years old.

The bulls, with two or three exceptions, were all remarkably fine animals of their respective breeds; and the collection, as a whole, it is believed, greatly surpassed that of any previous exhibition.

The stock is put down in this report as to the cross, or admixture of blood, as it was found described by the competitors. But it is well known to those at all acquainted with the Devon stock, that it is remarkable for transmitting its own character; so that the description on some of the cards, "half Devon and half native" did not describe the appearance of the stock with any degree of accuracy; inasmuch as some of the animals marked in this way were almost exclusively Devon in their characteristics. And the same variations existed, though in less degree, with the Durhams and their admixtures.

The Durhams were remarkably fine animals, and so were the Devons, and to decide between them, necessarily raised a question in the committee, which is of the highest importance,

and which can be settled only by experiment among farmers, to wit: which is the best stock for Worcester county, the Durham and its admixtures, or the Devon and its admixtures? Upon this question the committee were equally divided. The result of this division of opinion in the committee, was that the chairman had to decide for the committee in awarding the two first premiums "for bulls of two years old and upwards."

The chairman, it is well understood by the society, is the mere servant of the committee, whose duty it is to wait on the committee during their examinations, and report their decisions to the society, with this single exception, when the committee is equally divided in opinion, so that it cannot come to a result, the duty of deciding then devolves upon the chairman.

Through the action of the chairman, the premiums "on bulls of two years and upwards," were awarded as follows:

To Calvin Sanford, of Barre, for his Durham bull, $10.
To Russell A. Davis, of Oxford, for his Devon bull, $8.
To Asa Holbrook, of Holden, for his Devon and Durham, $5.

The entries of bulls under two years old, were as follows:

Nathaniel Dodge, Sutton, North Devon, one year and three months.

Ward N. Boylston, Princeton, Devon, one year and four mos.

Alanson Park, Millbury, half Ayrshire, one year and three months.

Alpheus Davis, Charlton, half Creampot, one year.

The committee awarded the premiums under this class as follows:

To Nathaniel Dodge, Sutton, for his Devon, $8.
To Alanson Park, Millbury, for his Ayrshire and native, $6.
To Alpheus Davis, Charlton, for his Creampot and native, $4.

The members of the society cannot fail to perceive that there is great diversity of opinion among the farmers of Worcester county upon the question, which is the best stock of pure blood, or if not pure, how it shall be mixed, for Worcester county? And all that they can require of a committee is, the exercise of an independent judgment by each individual composing

the committee. And it is but justice to the four gentlemen composing this committee, for the chairman to say that he believes they acted with just integrity to the society, and entire impartiality towards the competitors.

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L. A. Maynard, *Chairman.*

Farms.

The committee on farms, report but one claim to the society's premium for the best managed farm. This is made by Mr. Holloway Bailey. The committee visited Mr. Bailey in June, when they propounded a series of questions, his answers to which are annexed, and will indicate their character. Mr. Bailey's farm lies in the north-east part of Northborough, and contains one hundred and fifty or two hundred acres of land; the soil is a sandy loam, a part of it based upon a gravel subsoil, and a part upon clay and gravel; is generally light, but under the excellent management of Mr. Bailey, produces good crops.

The committee award Mr. Bailey the society's premium of fifteen dollars.

John Brooks, *Chairman.*

Holloway Bailey's Statement.

Gentlemen,—I submit, respectfully, to your consideration, the following condensed answers to the questions proposed:

1st. The farm has never been surveyed, but it contains, by estimation, from 150 to 200 acres; the soil is generally good, consisting of pure, sandy or gravelly loam, subsoil generally gravelly. Upon the field where the corn of the last season was grown, the subsoil is of clay; this field seeded down upon the Indian hills, yielded a good crop of hay the present dry season.

2d. The farm is divided, by estimation, into mowing land, 50 acres; tillage, 8 acres; the remainder, excepting 30 acres wood and sprout land, pasturage and unimproved land.

3d. The crops consist of corn, rye, and potatoes; land cultivated and quantities produced as follows: five acres of corn yielding 150 bushels, or 30 bushels per acre; two acres of rye, yielding 40 bushels, or 20 bushels per acre; one acre of potatoes yielding 100 bushels. To these may also be added, the crop of hay, annually about 40 tons. All these crops, with few and unimportant exceptions, are consumed on the farm.

4th and 5th. The stock consists of four oxen, ten cows, one yearling, two horses and two colts; the cattle are of a mixed breed of Durham and Holderness. The product of the milch cows is 1,000 lbs. of butter, and 300 lbs. of cheese annually, besides the milk furnished for the consumption of the family, or 78 gallons per year; 750 lbs. of butter are annually sold; from the sour milk, whey, &c., eight hogs are fatted.

7th. In preparing the ground for my grain crops, I plough a depth of from seven to ten inches, for potatoes to a greater depth where it is possible without disturbing the subsoil. I used the subsoil plough during one season—no change was perceptible in the crop of hay, but the fall feed was better where it was used than in other parts of the field.

8th. The manures employed are composts of loam and mud with the excrements. After lying in the yard until by ploughing and harrowing they are thoroughly mixed and composted, they are heaped up and remain until October, when they are carried out and laid in heaps of eight or ten loads in the tillage lands for the ensuing year, and also in small heaps upon the mowing lands. Green manure is also drawn from the barn in the spring upon the tillage lands, laid in small heaps and spread. The hog manure is drawn out in the spring, laid in the same large heaps upon the barnyard manure, and composted therewith. About 100 loads are annually applied to the tillage lands and about 70 to the mowing and irrigated lands.

9th. In the composting of manures in these yards, both meadow mud and soil are used in quantities varying from 60 to 100 loads annually.

10th and 11th. I use no artificial manures except gypsum, nor any liquid manure separately from the solid. I am, however, inclined to the opinion, from an experiment made two years ago upon a somewhat exhausted field, that soil, or sandy

loam, thoroughly saturated with urine, is of equal value as a renovator of the soil, with our best solid manures.

12th. My irrigated land is about six acres, and in irrigating it, I convey the water in ditches, and from them throw out the water as required. Upon these lands a compost of horse manure and sandy loam being spread at the rate of seven cart loads per acre, produces a crop of two tons of hay per acre.

13th. My grasses are herds-grass, clover and redtop. I sow a mixture of a peck and a half of herds-grass, three pounds of clover, and two quarts of redtop when I sow my spring grain. Last year I sowed upon the Indian hills of my corn field at the spring hoeing.

14th. The rotation of my crops is as follows: the first year after turning the sward, I plant with corn or potatoes; the second year I sow oats, barley, or rye, and seed down to grass. The length of time in which I allow a field of grass to lie, is three or four years.

15th. In order to prevent the impoverishment of natural English mowing, I spread manure upon it in fall or spring, at the rate of five or six loads per acre.

16th. My fruit trees are peach, pear, plum and apple. One hundred and fifty of my apple trees are in a bearing state; 110 of which are engrafted with the following kinds:—Pearmain, Porter, Lyscomb, Baldwin, Golden Russet, Summer Sweeting, Ribstone, Hubbardston Nonesuch, Hamburg, Ladies' Blush, Bell, and Gillyflower. Besides the 150 trees in a bearing state, is an orchard of 40 young trees, which were set during the two last years. I have 50 barrels of apples the present season, which is not the bearing year. My winter apples are gathered in September, laid in heaps in a dry chamber until October, when they are barrelled and kept from moisture in the open air till freezing weather, when they are carried to the cellar.

17th. The annual expenses of the farm are as follows:—

Value of provisions consumed annually by the family,	$300 00
Value of labor required in carrying on the farm, .	447 50
Incidental expenses, ...	100 00
Total, ...	$847 50

18th. In determining the annual income of my farm, I

have ascertained the values of the several kinds of produce by multiplying tons, pounds or bushels, by the usual price per ton, pound or bushel.

Adding these several values, the result arrived at, as the annual income, is $1,082 00

19th. During the last five years, as improvements on my farm, I have converted a piece of rocky, stubborn pasture land into good arable tillage land, on which some of my young trees above mentioned are set. I have laid 300 rods of wall, at an average expense of $2 per rod. About eight acres of upland pasture has been reclaimed at an expense of $10 per acre. I have also reclaimed a piece of meadow land, consisting of 200 square rods, first draining and then ploughing; upon it, as ploughed when still wet, a top-dressing of sand was applied; horse manure was then carted upon the land at the rate of seven loads per acre, and upon this the seed was sown, harrowed in with a light harrow, and rolled. It is now manured annually in the fall, with a compost of horse manure and sand, and where before a half dozen heaps of sour, insipid or tasteless herbage was with difficulty obtained, I now cut at the rate of $2\frac{1}{2}$ tons hay per acre. This change has been wrought at an average expense of $20 per acre.

Northborough, Oct. 22, 1852.

Meadow, Swamp, and Uplands.

In commencing their report, the committee cannot refrain from expressing their sorrow for the bereavement the society has recently sustained by the loss of their late president, and chairman of this committee. By his death the society is called to mourn the loss of a much respected officer, and the public are deprived of an able report, which his knowledge and ability would have enabled him to make upon the subject referred to this committee.

There is an entry of three lots of land claiming the society's premiums for improved meadows, swamps and uplands; they are all made by Mr. Harvey Dodge, of Sutton, and are for im-

provement on uplands. Mr. Dodge's farm lies in the north-east part of Sutton, on a slope of land descending to the north, and contains 100 acres. Lot No. 1 is on the south side of the road, and contains 2 acres and 129½ rods; lot No. 2 is on the north side of the road, and contains 4 acres and 115 rods; lot No. 3 is on the north side of the road, opposite No. 1, west of and adjoining No. 2. The general aspect of the soil is black mould mixed with sand; the subsoil is comminuted sand mixed with clay, and is retentive of water. The improvements claimed are for cutting brush, removing stone walls, irrigating, and under-draining. The lot on the south side of the road is 13 rods wide and 33 rods long, has a drain on each side and through the middle, leaving the space between them 6½ rods wide. These drains are cut in the line of steepest ascent of the land, with lateral drains running into the outside ones at an angle of about 30 or 40 degrees, 6½ rods apart.

Lot No. 3 has two drains cut across it in a diagonal direction, about 6½ rods apart. The drains are all from 3 to 3½ feet deep, and filled with stones, which form a conduit to convey away the water. From the knowledge one of the committee has heretofore had of these lands, and from their present appearance, it is evident that the improvements made upon them by Mr. Dodge have added very much to their productions and value. Where formerly grew nothing but brush or worthless herbage, now grows from two and a half to three tons of good upland hay to the acre annually. The drainage water from lot No. 1, on the south side of the road, Mr. Dodge uses for irrigating lot No. 2, and some other land on the north side, the effect of which is commensurate to that of the draining on the south of the road, a part of it producing the present year a good crop of oats, and the remainder from two and a half to three tons of hay to the acre. Besides the improvement by draining, Mr. Dodge is understood to entertain the opinion that the saving of land by sinking his walls into drains, and the advantage of large over small fields in cultivation, pays a considerable portion of the expense. In this opinion the committee do not fully concur, believing that where stone fencing material is plenty, small lots are preferable. Frequent fences prevent the blowing away of the debris and other vegetable matter always prevalent on the surface, retain the snow in

winter, and the fertilizing matter derived from it, and if used for pasture, twenty acres divided into four or five lots will pasture more stock than if fed in one lot. For the improvement on these lands by removing stones, brush, &c., Mr. Dodge deserves commendation; and by the improvement consequent to irrigation and drainage, he affords an example to all, possessing wet cold lands, worthy of imitation. It is an old adage that water is wealth; and ancient history informs us, that the early and most successful efforts of agriculture were directed to the supply of water to the various objects of cultivation. The promise made to the Israelites was, "The land whither thou goest in to possess it, is not as the land of Egypt, where thou sowedst thy seed, and wateredst it with thy foot as a garden of herbs: but the land whither thou goest is a land of hills and valleys, and drinketh water of the rain of heaven." Verily, our land is a land of hills and valleys, and some of it drinketh water of the rain of heaven to repletion. Irrigation and drainage are two modes by which the cultivator of the soil may, under different circumstances, dispose of water: some may score the surface of their thirsty fields with water courses, and court the presence of water, to supply the wants of vegetation, while others, finding their lands within the debatable margin of two elements, must encounter it as the worst enemy to successful cultivation. The practice of Mr. Dodge is not in accordance with the opinion entertained by the committee, as to depth, direction, and distance apart, drains should be cut; Mr. Dodge has cut his drains from three to three and a half feet deep, some of them oblique to the steepest ascents of the land, and six and a half rods apart. The committee believe that drains, to produce the best effect, should never be cut less than four and a half feet deep, always if practicable in the steepest ascent of the land, and not more than 36 or 40 feet apart. For thus differing with the practice of so distinguished an agriculturist as Mr. Dodge, the committee feel that they should give a reason. It is well known that evaporation produces cold; how much the evaporation of one pound of water of drainage, from one hundred pounds of soil, will reduce its temperature, the committee cannot say; there are scientific reasons to show that it cannot be less than 10 degrees. This cold is the principal cause of

the unproductiveness of our wet, swaley, and some of our hill lands, and must be removed, before the most valuable results can be obtained by cultivation. The most obvious way of doing this, is by draining, and the question arises, how drains should be cut to produce the best effect? Water will rise by capillary attraction in wet retentive soil, 18 or 20 inches; wateer oozing from wet soils into a drain 30 inches deep, is one or two degrees colder in the vegetating season than water oozing from the same soil into a drain four feet deep, and the latter is generally colder than the water in a contiguous well. From this we may conclude that the influence of evaporation is considerable at thirty inches, less at four feet, and little or nothing at greater depths. The water, then, must be laid thirty inches below the surface to protect it against the influence of evaporation, eighteen inches to guard against attraction, or four feet in all, to protect the land against the cold produced by the two causes combined. The temperature of water drawn from a wet soil into drains three feet deep is seldom higher in the vegetating season than 50 degrees; air above the surface of the earth at the same time is often 80 or 90 degrees, and sometimes much higher; drains then four feet deep draw out water of 50 degrees temperature, every particle of which is replaced during the season of vegetation, by air and rain water of a much higher temperature, constantly warming and assimilating the soil to the depth of the drain, to their own temperature. Thus, drained lands, in the season of vegetation, are 10 or 15 degrees warmer than undrained lands; in winter, when the air and water above the earth's surface is generally colder than the soil below, drained lands are colder than undrained lands. This is no disadvantage; for, in our climate, plants do not suffer so much from cold in winter, as from a deficiency of warmth in summer—the frost descends, disintegrates the soil deeper, becoming a good substitute for subsoil ploughing. Feculent water, filtered through 30 inches of retentive soil, comes out more or less colored, but when filtered through four feet of the same soil, comes out nearly pure, leaving most of its fertilizing matter in the soil to aid the growth of plants. Water gets into the drains by gravity, or fall, the upper particles pressing upon those below, shoving them aside, in the line of least resistance, which is the drain,

and the quantities of water discharged in equal times by drains are nearly as the square root of their depth. While a three-foot drain is discharging $1\frac{732}{1000}$ pounds of water, a drain four feet deep will discharge 2 pounds, thus draining the land earlier in the spring, and sooner after a rain.

Drains should be cut in the steepest ascent of the land; when cut oblique to this line, the tendency of the water will be to hang upon and gully out, and settle into, the lower side of the drain, choking the conduit with soil, and imperfectly draining the land. The only obstacle to water flowing into drains is the friction of its particles with those of the soil; to overcome this a fall of about a quarter of an inch to a foot is required; therefore, to place the water below the influence of evaporation, and drain the land at the point intermediate between two drains four and a half feet deep, they should not be cut on level land more than thirty-six or forty feet apart. Mr. Dodge's drains being six and a half rods from each other, and only three and a half feet deep, will not on level land drain it at the intermediate point between any two of them more than about twenty-eight inches deep. The water having to struggle through the soil a distance of nearly fifty-four feet to get into either drain, will require a fall of fourteen inches, which taken from three and a half feet, leaves twenty-eight inches, the depth to which the land would be drained at the intermediate points. The cold produced by the influence of evaporation on water twenty-eight inches below the surface, will in a few years kill out the better upland, and encourage the growth of the sour, swaley, grass.

The committee award to Mr. Dodge, for the best conducted experiment on not less than two acres of upland, by underdraining, the society's first premium of fifteen dollars, and for the best conducted experiment, on not less than two acres of upland, by irrigation, the society's second premium of ten dollars.

In closing, the committee congratulate the trustees on the advancement of agriculture in this county, since the organization of this society. Farming is taking a stand among other professions, which the importance of agriculture justly demands. Clubs are formed in many towns, and are numerously attended, practical and theoretical discussions take place

at farmers' meetings, agricultural journals are more generally read, and there has grown up an intellectual activity, among those connected with the cultivation of the soil, giving a higher tone to agricultural writings, which will lead, as high mental efforts always have done, in all other arts, to a more rapid advancement of the art of culture, and to a more general application of improved methods of fertilizing the soil. Much of this is due to past officers and the members of this society, and we trust they will long continue to stimulate the rural population of the country, and diffuse among them the elements of practical and scientific knowledge, and their application to agricul ture.

John Brooks, *Chairman.*

Harvey Dodge's Statement.

The first lot of land that I offer for the society's premium, contains by measurement two and three-quarter acres nine and a half rods, and, until August, 1849, was enclosed on all sides by an old dilapidated stone wall, which had been thrown up from time to time with small stones from the adjoining lots, as the object had been rather to get rid of the small stones than to build a convenient wall.

At the time I commenced operations this wall occupied six feet of land as its foundation, and had become so poor that it was not sufficient to prevent cattle from walking over it.

To do justice to myself in describing the method I took in reforming this and the other lots adjoining, I shall be obliged to speak of the location of my farm as well as the quality of its soils to some extent.

My farm, on which this reformed upland is situated, is in the north-easterly part of Sutton, one-half mile south of the valley of the Blackstone River, and the same distance from the Providence and Worcester Railroad at that place.

My farm is what we term in Worcester county hill land, and is situated about 200 feet above the bed of the Blackstone River, where it passes the Sutton Railroad station.

My buildings are situated near the centre of the farm, containing one hundred acres.

Last March I employed an accomplished surveyor and

draftsman to take a survey of each of my home lots by point and compass, and had a plan of them drawn on a map, solely for my own agricultural accommodation.

The road through the farm runs nearly an east and west course, and the buildings stand a few degrees higher than the extreme east or west terminus of the road. The descent from south to north was found to be eight inches to every sixteen feet south of the road, and twelve inches to the rod north of the road.

The length of the farm, north and south, was found to be 150 rods, and as the road runs east and west, its length is 110 rods, so it will be noticed that this road runs nearly centralwise of the farm, dividing it north and south in nearly equal portions, and it will be observed that the descent north of the road is one-third greater than it is on the south side.

The committee will see that I have been obliged to go into detail as to situation and location of the farm, in order to show why I take this method to reform the different lots. This lot, as above described in part, was, until August last, situated directly south of my barn, one corner of the lot coming within four rods of it, and at that time it was one of the most unsightly lots on the farm. It had always been used, or at least for a hundred years, as a pasture, and its principal products had been white birch, hardhack, and brakes to fill up the intermediate spaces, and all attempts had proved failures to kill out the brush with the scythe, or plough, on account of the rocks. The soil had always been considered poor. For about four inches of the surface the soil was black, with a yellow, gravelly subsoil, quite unlike that of the surrounding fields, whose subsoil is yellow loam, bearing on a chalky subsoil. Immediately above this lot the land is swampy, and the consequence was that water from above has been constantly leaking down through this pasture. In winter it would flow over on to the surface, freeze and kill out the grass, and until June would be so wet as to prevent cattle from passing over it.

At the time I commenced operations, in 1840, the committee on carrots were here to view a crop which had been entered for premium, and they appraised its value for agricultural purposes at $17 per acre.

My plan was to underdrain this, as well as some of my ad-

joining lots. This lot was about thirty-three rods in length north and south, and thirteen east and west, with one of these old walls, similar to the one which I have already described, on each side the whole length, making sixty-six rods. I cut a ditch close by the side of the wall, on the west side, three and a half feet deep and three and a half wide, and on the east side three and a half by four, and on this side the old wall was tumbled into the ditch, and small flat stones were placed carefully on the top, old straw and brakes were thrown in over these, which filled the ditch within six inches of the surface, and the soil, so far as needed, was brought over the trench with a light cast iron ox shovel, and this is used for a road in carting to lots above. The ditch on the other side of the lot was filled, first by laying stones at the sides ten inches high, and covering with flat stones, and then all the small stones from the old wall were thrown in, the ditch filled to within eight inches of the top, the surface stones levelled, poor hay and straw thrown on, and the soil brought back as before. The remainder of the subsoil was carted and used for grading up the low places within the ditches. The next thing to be done was to cut a drain centre-wise the whole length of the lot, three and a half feet wide by three deep; this was stoned up twelve inches at the sides and covered with flat stones, all of which were taken from the surface between the two first drains, and filled with small stones even with the surface soil, and left open to catch the surface water in winter. The brush and brake roots were broken off by the plow, and piled in heaps to burn. This left the surface soil comparatively smooth, with the top soil covered with small stones. It will be perceived that these three drains lengthwise were six and a half rods from each other. Drains were now cut anglewise between these drains, so that the water was principally emptied into the outside drains. These were cut once in six rods and two and a half by three feet, and filled with stones to within eight inches of the top, and covered as the others, and the surplus subsoil used for grading the low places.

The next object which I wished to accomplish was to sink the larger rocks. This was done by digging a hole on the lower side of the stone, usually twice as deep and large as the stone, and drop the stone in, then fill up the vacancy to within

about twelve inches of the top, and the soil was then thrown in with the ox shovel as on the drains. These boulders varied in size all the way from a bushel basket to a molasses hogshead, and there were some few much larger. I will here state this has been my practice of getting rid of large as well as small stones for several years, and I find it decidedly cheaper than blasting and building large and needless walls. The next process was to plough, which I was enabled to do in a pretty thorough manner, the drains and stone holes having taken up all the surplus stones as deep as I wished to run a plough. I ploughed and harrowed several times during the fall of 1849. In the spring I found no difficulty in working the land early on account of wetness, and in June and July, after several workings, forty loads of manure, containing twenty-five bushels each, were carted on to the acre on one part, and ground bones to the same value on to a part, side by side, and about one-half the lot was sowed to turnips the 1st of August. The other part was not cropped that season, as the ground was not mellow enough to secure a crop. (Bones succeeded well with turnips, but the grass as yet has been lighter.) During the fall of 1850, this idle part was frequently worked over and manured as the other was the year before, and it was sowed to turnips July 15th, and the crop gave about 700 bushels to the acre on either side.

The half sowed to turnips in 1850 was sowed to oats in 1851, and the last half, in May, 1852, with grass seed, and at this time the whole lot is seeded to grass. A precise account has been kept of the labor and manures and the amount of crops to this time, excepting the hay on a part of the lot the present season, which was estimated, and could not have valued much. I paid by contract for cutting drains $52 92. Manure at the stable was reckoned, at $1 per load, $95. Bone dust, fifty bushels at forty cents, $20. All other labor, up to harvesting the first crop, $91 60—making a sum total of $259 50. The whole amount of crops taken off up to this time $172, after paying all expense of tillage and harvesting—leaving the lot in debt $86 50, which sum, with interest, I have no hesitation in saying, may be realized without any other labor than gathering the crops within the two coming years.

The lots on the east and west sides receive as much benefit

from the two outer drains as this lot. In cutting over 200 rods of underdrainage, as well as digging for bank walls, I have found no stones of any amount in any of my soils three feet underground, and this may account for my being able to sink large stones cheaper than disposing of them otherwise. It will be remembered that in throwing down these walls I save twelve feet in width and 544 feet in length of land; whereas, if I had cleared this lot of its rocks in the usual way, by digging, drawing, and piling up against the old wall, the stones would have required in all about one-half acre of land to stand on. My plan has been to sink all the stones in sight, as well as all the needless old walls, and to turn several lots into one, instead of dividing one lot into many. Your committee will recollect of my pointing out to them the different parcels and lots of land which were formerly divided into eight lots of all sizes and shapes, and where partition walls to the amount of 107 rods of old walls in a ruinous condition had been used to fill six hundred rods of underdrainage. All of these eight small lots formerly composed of here a pasture and there a mowing, have been turned into one lot containing twenty-two acres one and a half rods, and as many as eight acres were as rough as the one described.

Lot No. 2, contains four acres, two quarters, thirty-five rods. It is situated on the north side of the road, and from fifteen to twenty rods north-east of the above described lot, having always been used as a pasture until August, 1849. The soil was naturally good; four inches of the surface soil being a dark mellow loam, with a friable chalky subsoil, naturally much more dry than any of my opposite lots on the south side of the road. This land had been noted for being rocky, so much so that it seemed impossible to drive a plough through it. Clumps or bunches of brakes and white-bush had rather increased, instead of diminishing, for the last twenty years, notwithstanding I had paid out from three to five dollars yearly for mowing brush for several years.

Late in May, 1848, I turned some twenty hogs into this pasture, keeping them in part from the piggery till the first of October, and so again in 1849. My expectation was that they would root up the ground, and consequently kill out the brush; but in this I was mistaken. They seemed determined to go

on with operations just so far as suited their own convenience and no farther. It would be doing the herd of swine no more than justice to say that they turned up all the small stones to view, as well as removed some of the brush from others, so that at the commencement of my operations this lot presented anything but a desirable aspect.

In August, 1849, I commenced sinking the large stones, which were about the same size of those in lot No. 1, and the same method was taken as above described, only the holes were dug larger than those, as I wished to fill up and get rid of the small surface stones. After sinking about 200 of the larger class of stones, and getting rid of a large share of the small surface stones, we were enabled to plough, and by the first of December the whole lot was ploughed and left exposed to the action of the frost during the winter.

In the spring of 1850 it presented a very formidable aspect; but in May my teams were put on, the stones gathered and drawn into large heaps; it was then harrowed, the stones gathered again and piled up; next it was cross-ploughed and harrowed, and the 4th of June, after carting on 150 loads of manure, planted to corn. The crop was 200 bushels of corn and 600 bushels of English turnips. The corn, at 75 cents per bushel, amounted to $150; the turnips, $75; potatoes, 50 bushels, to $25; making the total worth of the crops in 1850, $250. Against this we have $150 for manure, and $100 for labor in ploughing, harrowing, cultivating and harvesting crops, from the commencement; leaving the lot in debt April 1st, 1851, $100 for sinking and clearing off stones. In May, 1851, one-half of this lot was sowed to oats, and the other half, after being dressed with 40 loads of manure, was planted to corn and turnips. The season proved unfavorable, and only 80 bushels of corn, 500 bushels of turnips, and 70 bushels of oats were harvested. Value of the corn, $60; turnips, $75; oats, $35; total amount of crop for 1851, $170. Dr. for grass and other seeds, $12; for manure, $40; labor in cultivating, harvesting and removing stones, $100; making a total outlay of $152; leaving a balance in my favor, of $18 for 1851.

In April, 1852, $23 worth of labor was expended on the half planted to corn last year, in sinking stones, grading up low places with subsoil from stone holes, and $10 for seed oats,

grass seed, and getting in oats; making in all, an outlay in 1852, of $33. The amount of crops was 80 bushels oats, worth 45 cents per bushel, $36, (straw against harvesting); five tons of hay, estimated worth $50 standing, amounting to $86. Expenses $33; leaving a balance in my favor of $53 for 1852. Add to this, $18 in my favor first year, and I have $71. Now, if I bring down the $100 expended in 1849, as labor on stones, and interest three years, making a total of $118, it shows the lot indebted to me at this time, $47. The land is now all seeded to grass, and all stones that would trouble the scythe or horserake are out of the way.

The whole lot was rolled with a heavy roller, and the small stones picked up at the time my oats were sown, as is my usual custom. It will be necessary for me here to show what was done with the water flowing from lot No. 1, through its drains. The outlet of the eastern drain has been opened into the road, and the water carried along by the south wall for about eighty rods, and used for the last two years on a five-acre mowing lot, at the extreme east part of the farm. The descent from top to bottom on this lot, is about two feet to the rod, so that the water passes over rapidly, and the effect has been surprising. I cut, last year and the year before, one-third at least, more hay than had ever been cut before on that lot. As this last reformed lot adjoins the road, I have put a culvert across the road, and have introduced the water on to lot No. 2, first at the south-west corner of lot No. 2, and about eight rods from said outlet on No. 1, and the other outlet is 25 rods farther east, and carries the water to lot No. 2, centreways. Here are shallow ditches, so that the water may be easily carried over the whole lot at my pleasure, and then be permitted to drop down on to a mowing lot still north, or be turned off, as I may choose; and at the road a flood gate is so constructed as to let the water on to this lot, or permit it to pass on, as it has done, to a five-acre mowing lot at the east side of the farm.

Lot No. 3, contains three acres thirty-three rods, and is located directly north of lot No. 1, (the road running east and west, divides the two lots,) and joins lot No. 2 on the east. This lot had been used for more than fifty years, for what we call natural mowing, and by a light coat of top-dressing of compost

manures once in two years, had produced about one ton of hay to the acre, composed of wild grass with a small share of redtop, and a large quantity of sour brakes. Bushes had increased each year on this lot notwithstanding all efforts to eradicate them.

The quality of the soil differs somewhat from either of the other lots; the soil being more cold and wet than No. 2.

My first operation on this lot was to cut a drain from the west outlet of lot No. 1, across the road, and about 20 rods through this lot where it emptied itself into a lot of light loamy land at the north-west corner of lot No. 3.

This drain was cut four feet wide and three and one-half deep, and a culvert of 12 inches square was built of stone at the sides and covered with flat stones, and was filled to within 10 inches of the surface by carting and tipping in small stones, of which there was an abundance on the lot after I had commenced breaking it up, which was in September, 1847. The whole lot has since been used for various root and herb crops up to 1852, when it was all laid down to grass. I should have stated that this lot had never been ploughed previous to 1847. I permitted it to lay for one year, and till during the summer that the lot was idle, 15 hogs were permitted to work over the sods, which they did in a pretty thorough manner by the 1st of September, 1848. At that time I caused a drain to be cut, of the same dimensions of the other, commencing at the outlet of the centre drain, which emptied out of lot No. 1, directly through the centre of lot No. 3, and filled it, after laying a culvert in the same way that the other was filled. This drain is used for conveying off the surplus water in winter and early spring.

The water can be turned into the east or west drains as it is wanted, by closing a flood gate in the centre drain at lot No. 1. The cost of sinking stones, as well as clearing the small ones off, and grading up the low places, was something more than lot No. 2; and my crops have been equal to all labor on the lot except digging the two drains, each 20 rods in length; cost of digging, $25; only one-half the expense o these drains should go to this lot. The west drain, which takes the water from the west drain on lot No. 1, was constructed to take the wash of the barn cellar, a soap shop, and all other out

buildings, and passes on with its impregnated waters, some eighty rods, where it empties itself on to a dry, warm, loamy soil, spreading over two lots. The effects have been surprising; the crops having more than doubled; besides, I have experienced no inconvenience in having the drains from my buildings stopped, as the water from above carries all the useless washes along with it on to the hungry soil, instead of being left around the buildings.

My object from the first, was to underdrain lot No. 1, carrying its surplus water on to lot No. 2, so far as needed, and the remainder under ground, down through No. 3, using it for irrigating several acres of my dry, warm land, laying some 50 rods below, where the effect has been wonderful.

I intend all three of these lots to be used for what we term natural mowing, by giving them, as often as may be necessary, a light top-dressing with compost.

Inquiry has been frequently made, How much a rod do you pay for cutting these drains? What does it cost you to sink your large stones? For cutting about 600 rods of drainage on my south lots, $3\frac{1}{2}$ feet deep by three feet wide, I have paid 25 cents per rod; and larger drains in same proportion. For sinking stones, the cost has been, for those as large as a cider barrel, nine cents.

Sutton, Nov. 29, 1852.

Root Crops.

The committee on root crops have attended to the duties assigned them, and in the examination of the crops shown to them by the competitors, have taken great satisfaction.

There have been an unusually large number of root crops entered for the society's premiums, which has made the labor of the committee rather onerous; yet it has been a pleasant service, and cheerfully rendered.

While on duty, the minds of the committee would often revert to the lamented Lincoln, whose labors as chairman of this committee had been anticipated, but whose days were numbered and finished.

It is no part of the duty of this committee to pass an eulogy on the departed President of the Worcester Agricultural Society, yet worth should always be appreciated, and the proper reward should never be withheld from merit. Ever vigilant, his energies, for a series of years, had been commendably exerted in behalf of the interests of the society whose servants we are. His mind was always open to the promotion of the interests of agriculture. The deep feeling he manifested on the subject, rendered him eminently qualified for the stations he so honorably and respectably filled.

The Recording Secretary furnished the committee with the following list of entries of root crops :

By James Estabrooks, one-half acre of carrots on his farm in Boylston.

By Samuel Perry, one-half acre of carrots on his farm in Worcester.

By William S. Lincoln, one-half acre of carrots on his farm in Worcester.

By Jonathan Warren, one-half acre of carrots on his farm in Grafton.

By James F. Thorndike, one-half acre of carrots on his farm in Grafton.

By Harvey Dodge, two half acre lots of carrots on his farm in Sutton.

By Cyrus Kilburn, one acre of potatoes on his farm in Lunenburg.

By James F. Thorndike, two acres of potatoes on his farm in Grafton.

By Harvey Dodge, one acre of potatoes on his farm in Sutton.

The severe drought with which this section of the country was visited during the last season, though not entirely destructive, was very detrimental to the root crop, more especially to the potato, which was in a state of formation during the drought, and the growth of which was principally after the late summer, or early fall rains. By this providence, the crop of potatoes was so much shortened, or for some other reason, the competitors on this crop did not make the necessary returns to the recording secretary, to enable them to come under the

most favorable notice of the committee, and they of course fail of the substantial applause of the society.

The crops entered, were all visited by the committee, except the acre of potatoes entered by Mr. Dodge, who being aware that his crop would not come up to the requirements of the society, (18,000 lbs. or 300 bushels per acre,) had carefully deposited them from the committee's observation. We cannot, however, refrain from speaking of the potato crops which we did visit, and very briefly name the experiments made by Mr. Kilburn and by Mr. Thorndike, at the same time regretting that those gentlemen did not make a full statement of all the facts themselves, because it is in this way that that information is obtained which it is the object of this society to acquire and to disseminate.

The soil on which Mr. Kilburn planted his potatoes, lays low—bordering on swamp—is a black, sandy loam. The *variety* of potato planted had not before fallen under the observation of either member of the committee. It is a long potato, but larger, in proportion to its length, than the "long red." The general color is red, but streaked with white like the leopard potato. He obtained his seed from the town of Holland, in Hampshire county, and therefore calls it "the Holland potato." Dr. K.'s seed were large potatoes, so cut that but two eyes were on one piece, and two pieces were put in a hill, requiring six bushels of seed to an acre of ground, and planted two feet by three and a half apart. Several hills were dug in the presence of the committee, which yielded from four to seven potatoes of large size to a hill; some of them weighed from 12 to 13 ounces by the steelyards. One hill was dug, the seed of which was one large potato, which was said to contain as much seed as twelve other hills. From this hill were taken a much larger number of potatoes, but they were far inferior in size to those from other hills.

The ground on which Mr. Thorndike experimented was a piece of old tough pasture; never before was it ploughed; and even at the ploughing, as the committee were informed, did some of Mr. T.'s neighbors more than think that "to plough the old pasture would prove a bad job." He is, however, entitled to much credit for his perseverance, and will be richly paid, in time to come, for subduing the "old pasture." The

soil is black loam, with clay subsoil. The seed planted was "*long red.*" Mr. Thorndike experimented as follows:—First, with the point of a pocket knife, he cut the eyes from the bulb with as little of the potato as possible, without injuring the eye; eight eyes were put in a hill. From this manner of planting, those that were dug in presence of the committee produced a very fair yield, and the potatoes were of decent size for table use. Next, Mr. T. cut his potatoes and planted so that twelve eyes were put in a hill. The yield here was better than where the eyes only were planted; they were larger and decidedly better.

Next Mr. T. cut his potatoes in halves, and planted half a potato in a hill. The produce in this case was not unlike that of the twelve eyes. Next Mr. T. planted a whole potato of large size in a hill, which produced decidedly the best crop. The potatoes were larger and of more uniform size, and it was the unanimous opinion of the committee, that the saving of the seed in the former cases was an injury to the crop, and of course a draft on the profits of the crop. These experiments were tried in a field of three acres, from which Mr. T. selected his two acres which were entered for premium. The seed for the two acres was cut into pieces containing two eyes each, and three pieces put in a hill. The yield here, so far as the committee were able to discover, was not unlike that of the half potato or the twelve eyes.

Both this field and that of Mr. Kilburn were manured in the hill, with good compost manure. Each of the gentlemen intended that all parts of their field should be treated alike. Their experiments were not very unlike, though Mr. Thorndike's were more extensive. The result, however, we find to be the reverse. Where Mr. K. seeded the heaviest, the product was the lightest; and where Mr. T. seeded the heaviest, the product was the best. Was this difference produced by locality, by the difference in the seed, or by the kind of potato? are queries which will naturally present themselves to the mind.

Mr. Thorndike is doing much on his farm by way of improvement, and the public may yet receive much benefit from the result of his labors. The committee very much regret that they have not received a written statement from him and Mr. Kilburn in relation to their crops.

James Estabrook, Wm. S. Lincoln, and James F. Thorndike, having omitted to lodge with the Recording Secretary of the society a written statement in relation to their crops of carrots, are excluded by the rules of the society from receiving a premium, however much your committee may desire to bestow one upon them.

Yet we cannot refrain from speaking of their fields, thereby showing that the carrot culture is not on the wane, but is rather ascending in the estimation of the community as a field crop.

Sheriff Estabrook's carrots were on his farm in the southwest part of Boylston, of which he has recently come in possession. The soil on which his carrots grew is a deep, rich loam, and is adapted to the growth of any crop usually cultivated by the farmer. His carrots gave evident signs that they had not been neglected in the bestowment of all care necessary to insure him a handsome crop.

At the time of examination (Oct. 5) the tops were remarkably vigorous and of heavy growth. The bottoms were of good size, and promised a good harvest. They were rather thick in the rows to obtain roots of very large size, yet he might have as much weight as though he had thinned them in the row. The committee very much regret that Mr. E. did not communicate to them his bill of particulars—he would not have lost anything by so doing.

On entering Mr. Lincoln's lot, the soil of which is rather light, sandy loam, the committee entertained some fearful apprehensions for the crop from the appearance of the tops of the carrots; the drought, followed by the blight, had made what was above ground appear a little less inviting than were those of Mr. Estabrook, though the committee thought the bottoms were not inferior. Mr. Lincoln is an old cultivator of this valuable root, and from many years experience in feeding the same to his stock, knows, in a good degree, how to appreciate its worth.

Mr. Thorndike's effort this season was an experiment with him, it being his first trial

His soil is a deep, black loam, with clay subsoil. The lot on which his carrots were, was with great expense, during the last season, cleared of a large quantity of large rocks and stumps,

which his predecessors had suffered to remain *monumental*, that no mistake should be made in finding the lot. Though Mr. Thorndike may have felt himself unsuccessful in his crop of carrots, he is worthy of praise for his perseverance in eradicating from his field a heavy growth of weeds, which for a time threatened to destroy his whole crop of carrots. He labored under great disadvantage in the cultivation of his crop, during the past season, but has opened the way whereby he may attain to a higher degree of eminence in the same calling in time to come.

In this connection we cannot fail to make favorable mention of a lot of carrots raised by Mr. Wm. A. Wheeler, of Worcester. Without any special effort he succeeded in producing as good a crop as is often seen. They, as well as all the other lots of which we have spoken, were of the "orange variety."

Mr. Wheeler, though in a more lucrative calling, delights in agriculture, and has done much in the way of root raising. His example in that line is well worth following by beginners in the art.

He is for deep ploughing, that the root may have ample opportunity to descend into the earth, the top having full scope above it.

Wm. T. Merrifield, of Worcester, also grew a very handsome specimen of carrots, on a rather light soil, with gravel subsoil.

It is gratifying to the committee, and must be to all cultivators of the soil who take an interest in the improvements of the day, especially in agriculture, to witness such an increase of outlay in the production of so valuable a crop as that for which this society has offered to award the successful competitors.

Jonathan Warren, of Grafton, Samuel Perry, of Worcester, and Harvey Dodge, of Sutton, having returned to the Recording Secretary, written statements of facts herewith connected, become the subjects of the remaining part of this report.

Jonathan Warren's Statement.

Gentlemen,—This certifies that a piece of land containing one-half acre, measured by Charles C. Wood, produced as follows:—

1st. The general state of the land in the year 1851. *Ans.* Was planted with corn for two years previous.

2d. The manner of cultivation in 1851? *Ans.* Was planted with carrots and managed as in 1852.

3d. The quantity and quality of manure used in 1851? *Ans.* Twenty loads horse manure worked upon by hogs.

4th. The product of the land in 1851? *Ans.* A larger yield of carrots than in 1852.

5th. The condition of the land in the spring of 1852? *Ans.* As good as in the spring of 1851.

6th. The quantity and quality of manure used during the present season? *Ans.* Sixteen loads, same as in 1851.

7th. The mode of cultivation preparatory to sowing? *Ans.* Ploughed once, and beat up with a spade and levelled by raking.

8th. The quantity and quality of seed used? *Ans.* One and a quarter pounds of best orange carrot seed.

9th. The time and manner of sowing, weeding, cultivating, and harvesting crop? *Ans.* Sowed June 10th, by a machine, and hoed three times, harvested Nov. 5th.

10th. The amount of produce ascertained by actual measurement after the whole is harvested? *Ans.* Four hundred and sixty bushels.

11th. The entire expense of the seeds, manure, labor and cultivation? *Ans.* Fifty-nine dollars.

12th. The value of the product? *Ans.* One hundred and fifteen dollars for the roots, and five for the tops.

The above piece of land had upon the same sixty-five fruit trees, consisting of apple and peach.

Grafton, Nov. 27, 1852.

Wm. S. Lincoln, Esq.,—Dear Sir: I herewith hand you an addition to the statement made and sent to you in regard to the land that my carrots were grown upon. I would state that in the spring of 1848 it was grass ground, and had been laid down twenty years and not manured. I ploughed it and took out the rocks in order to prepare it for fruit trees. The soil is a deep black loam, with clay or hard pan underneath. I planted it with potatoes in 1848, but did not manure it; in the spring of 1849 I planted it with corn, put on fifty loads of the

very best manure, and raised 102 bushels ears of corn; in 1850 planted again with corn, but did not manure much—the crop not as large as the previous year. The two last years you have a statement of; I have not put anything down for interest upon land in the following statement of expense, as the fruit that I raised upon the trees will richly pay the same. In cultivating the crop I did not thin them out.

EXPENSES—1852.

16 loads manure, at $1 25 per load, . . .	$20 00
Carting and spreading same, ...	2 50
Ploughing in the manure, . . .	1 25
Levelling and beating the lumps and raking the same, also for sowing with a machine, . . .	5 00
Cash paid for seed, ...	1 25
Weeding three times, 15 days, . . .	15 00
Harvesting crop, 16 days, 87½ cts. per day, . .	14 00
	$59 00

Yours, &c.,

JONA. WARREN.

GRAFTON, Dec. 3, 1852.

Samuel Perry's Statement.

Gentlemen,—In relation to the acre of land on which I raised carrots the present year, and of which I entered two half acres for the society's premiums, I submit the following statement:

In the year 1850 we planted the above with corn—put on about 22 loads of green manure. Had not a large crop, say 45 bushels per acre.

In 1851 I ploughed the ground twice, and sowed about two-thirds of an acre with carrots, without any manure, about the 1st of June, the ground being in a fair condition, and cultivated in the usual way, by taking out the weeds as they sprang up. Raised 470 bushels, or at the rate of 705 bushels per acre.

The condition of land in the spring of 1852, will appear as above, (two-thirds of an acre); on the other third I raised oats and beets. The present year I could see no marked difference between where the three different products were raised.

On the acre of land I sowed the present year, I put 22 loads

of compost and green manure mixed, and ploughed it in; again ploughed the 27th of May. Prepared the ground by harrowing, bushing, and raking. Sowed 1½ lb. of good seed the 28th May, in drills 18 inches apart, with a common seed-sower.

June 10, ran a hoe between the rows; June 19, commenced weeding the same first time; July 7, commenced weeding a second time. In September ran over again, and pulled out the wormwood, &c. Commenced harvesting about the 8th, and finished the 13th of November. We omit harvesting carrots as long as we dare, for two reasons—the value of the tops after cattle are driven to the barn, and their growth increases while the ground is open.

The amount of produce, by actual measurement and weight, was, on the whole acre, 918 bushels. Six tons of the above were weighed. The whole was computed at 50 lbs. to the bushel.

The south half acre measured 470 bushels.

The north half acre measured 448 bushels.

Expense of raising 918 bushels carrots, on one acre:—

May, 1852.	To 22 loads of manure, . . .	$27 50
"	" labor in carting and spreading manure,	5 00
" 27th.	" ploughing twice, . . .	4 00
" 28th.	" harrowing, bushing and raking, .	3 00
" "	" 1½ lb. seed, $1 25; sowing, 75 cents,	2 00
June 10th.	" hoeing, 1½ day, . . .	1 50
" 19th.	" weeding, 8 days, $1 25 per day, .	10 00
July 7th.	" second weeding, 8 days, . .	10 00
Sept. 7th.	" weeding, 1½ day, . . .	1 50
Nov. 13th.	" harvesting, 16 days, . . .	16 00
	" interest on land, at $200 per acre, .	12 00
Total,	. . . . .	$92 50

Carrot field produced 918 bushels, or 22 tons and 38-40ths, at $10 per ton, ...	$229 50
Deduct expenses, ...	92 50
Net profit, ...	$137 00

N. B. The tops this year were of very essential service, worth four or five dollars, to be set off against trifling expenses

not mentioned; as also forty-nine apple trees of the third year's growth from setting.

Worcester, Nov. 29, 1852.

Harvey Dodge's Statement.

Gentlemen,—I herewith hand you a statement of the expenses and product of a lot of carrots grown on $101\frac{7}{10}$ rods of ground, on my farm in Sutton, the present season:—

VALUE OF CROP.

28,255 lbs. of carrots, at $\frac{1}{2}$ cent per lb.,		$141 27
4,000 lbs. of tops, fed to cattle, estimated at		3 00
		$144 27

EXPENSES.

1852.		
May 1.	20 loads stable manure,	$20 00
	150 bushels leached ashes,	9 00
	Carting, spreading, and ploughing in,	3 00
May 15–20.	To ploughing twice,	3 00
28.	Bushing ground, &c.,	1 00
28.	$1\frac{1}{2}$ lbs. seed, and sowing,	2 00
	Rolling,	50
August 15.	Hoeing, weeding, and thinning carrots, to date,	11 00
Nov. 10–20.	Harvesting crop and loading teams,	10 00
	Interest on land at $2 per acre,	7 60
	Total,	$67 10
	Net proceeds,	$77 17

This 101 rods carrots is a part of a lot containing 3 acres 1 quarter and 13 rods, on which I have grown corn one year and carrots the next for the last seven years; when to carrots, it has usually received a dressing of 40 ox cart loads of stable manure, or its equivalent, to the acre, and when to corn, none. Having been to corn in 1851, the condition last spring was medium. The soil is a light yellow loam, resting on a clayed subsoil, and worked to the depth of 12 inches. Twelve tons carrots were sold on the lot at $10 per ton, and 4,254 pounds

were put into my barn cellar—making on this 101 rods, 28,255 lbs. or 665 bushels, equal to about 894 bushels per acre. One quarter acre of this land produced at the rate of 960 bushels per acre; leached ashes being used instead of manure of equal cost. This lot of carrots was cultivated in the manner that I have advocated for the last ten years, namely, deep culture, between the rows (which are 15 inches apart) with a light hoe as soon as the young plant appears, and as often as once a week until the first or middle of August—never in wet weather, but when the sun shines.

The great advantage of underdrainage has shown itself on this whole lot the present season, both in the growth and healthy appearance of the apple trees and all kinds of vegetables.

This lot is 37 rods long, $8\frac{7}{8}$ rods wide at the south end, and about $17\frac{1}{2}$ rods wide at the north end, and descends 12 inches to the rod to the north-west. The south part has always been wet, mostly owing to water trickling down from land above; last winter a drain was cut four feet wide and four feet deep across the upper end of the lot, and small stones filled in to within 18 inches of the top—old hay and straw covered over to prevent the earth from falling down between the stones, and the earth brought back. This drain was commenced within a rod of the south-east corner and run angleways until it emptied into the road, four rods below the south-west corner of the lot. Water was discharged at the outlet of the drain until the middle of June. The field was worked full ten days earlier than ever before in a like season. Your committee will remember when here, of my showing them where a similar drain had been cut about centreways of this lot, and an old wall that used to divide this in two lots had been used to fill up the drain, which empties into the road. Carrots grew quite as large on top of the drain as anywhere.

It will be noticed that I have not brought any of the unspent manures to the credit of my present carrot crop as has been usual; neither has any mention been made of the growth of 160 apple trees, 35 of which stand on the carrot ground.

Sutton, Nov. 26, 1852.

The soil on which Mr. Warren's carrots were raised, is a heavy black loam, with clay subsoil. Mr. W. has been preparing it for growing fruit trees, for which it is admirably adapted.

Mr. Warren bestowed no extra labor on his carrots. They were well manured and sowed about right—they were not thinned—they stood well in the row and well filled the ground.

The field in which Mr. Perry's carrots grew, from which he has selected for premium one-half acre, contains about two acres, most of which was in carrots.

The field lies well, and evidently is of good soil. Mr. Perry is a good cultivator, and gets well paid for the care bestowed upon his crops.

By reference to their statements, it will be seen that Mr. Warren obtained from his half acre, 460 bushels, at a cost of $59—he obtained a net profit of $61.

Mr. Perry obtained from his two half acres, 918 bushels, at a cost of $92 50; he obtained a net profit of $137. On one of the half acres he obtained 470 bushels, and on the other half acre he obtained 448 bushels.

The committee award to Mr. Samuel Perry the first premium of $10, on his half acre of carrots, the product of which was 470 bushels.

And we award to Mr. Jonathan Warren the second premium of $7, on his half acre which produced 460 bushels.

By the certificate of entries from the hand of the Recording secretary, Mr. Dodge entered two lots of carrots for premium: one lot containing half an acre, and one lot containing one-quarter of an acre.

By his written statement to the committee, Mr. Dodge returns a survey of $101\frac{7}{10}$ rods of land, on which he has grown carrots the present year, and for which he claims the society's premium; but he failed to designate whether he claimed a premium on half or quarter acre.

In case he had claimed on the first, he would have been entitled to the third premium of $5. If he had claimed on the latter, he would have been entitled to the first premium of $10. In consequence of the above omission on the part of Mr. Dodge, the committee have not awarded him any premium.

By his statement, which we consider as a valuable part of

this report, it is seen that Mr. Dodge has been very successful in his carrot crop this season, and we regret that circumstances render it necessary for us to lay it aside.

Mr. Dodge is an old competitor in this branch of husbandry. He also enters largely into the cabbage and turnip culture, which is made profitable under his management. He makes his land produce well, whatever may be his crop.

His soap establishment is no detriment to his farm. The large quantity of leached ashes which it affords, together with bones used in various forms, makes a most *capital manure*, which is the *best capital* for the farmer.

THOMAS W. WARD, *Chairman.*

FEEDING.

To the Trustees of the Worcester Agricultural Society.

Gentlemen,—The committee to whom was submitted the consideration of "The best experiment in determining the advantages or disadvantages of cutting hay as food for stock, under the following regulations: A premium of . $30 00
For the next best, ... 20 00

"The trial to be made with at least two animals, their condition to be as much alike as is practicable; the time of trial to continue at least eight weeks, divided into periods of two weeks each. One animal to be fed with cut, when the other is fed with uncut hay, and the feed of each to be changed at the expiration of each two weeks, and so on alternately each two weeks, during the trial. If any other food than hay is given, (such as roots or meal,) the same quantity to be given to each, that the result in relation to the cutting the hay may not be affected by other food. The animals should be kept in the same stable, that they may be in the same temperature, the average degrees of which is to be stated. If the trial is made with cows, the time of having the last calf must be given, and also the weight of milk given by each cow, during each period of the trial. Each of the animals to be weighed at the commencement of each two weeks, and at the end of

the trial, and the statement must give an account of their condition, age, and every other circumstance that can have any influence upon the decision of the question, and that the experiment may produce the most satisfactory results, the same kind of hay (what is usually called English hay) should be used, during the whole time: the time of giving the food and drink should be regular, and also of the milking; the time of weighing should be in the morning, and before the animal has been allowed to drink.

"The statement must also give the quantity of hay, whether wet or dry, and other food given to each animal, and of each kind during each period of the trial, and to be forwarded and received by the Recording Secretary, on or before the 15th day of March, 1852, to be laid before the committee appointed for their adjudication."

On or before the said 15th day of March, a statement of a trial of feeding with cut and uncut hay, was received from Mr. Demond, of Grafton, with two dry cows: from Mr. Harvey Dodge, of Sutton, with two steers: from Mr. W. S. Lincoln, of Worcester, with two milch cows: and from Mr. A. H. Hawes, of Worcester, with two working oxen.

The committee was originally constituted by the appointment by the Trustees, of Hon. George Denny, Hon. John Brooks, and William A. Wheeler, Esq. After the decease of our lamented friend, Hon. George Denny, the Trustees enlarged the committee, by the addition of John W. Lincoln, Thomas W. Ward, and Charles Brigham, Esq. At the meeting of the committee, on the motion of the Hon. John Brooks, John W. Lincoln was appointed their chairman. Subsequently the Hon. John Brooks handed to the chairman a communication containing statements of a number of experiments made by him in relation to feeding of cattle, and for the purpose of ascertaining the quantity of solid manure voided by cattle in proportion to the weight of hay eaten by them. This communication contains much valuable information, of which the public should not be deprived, and is annexed to this report as an important part thereof, from which will be learnt the relative value of different articles of food, and the great importance to the farmer, of making use of his hay, grain and stover, as food for stock on his own land. Even those who have satis-

fied their own consciences by returning a load of manure for every load of hay sold from their farm, will find that they have been robbing their land of three-fifths of the manure which of right belongs to it. Mr. Dodge, in a letter to the chairman, states that during one of the periods of two weeks, his steers ate 508 lbs. of hay and 100 lbs. of meal, in which time all the solid manure was saved and thrown into a heap in the stable by itself; that at the expiration of the two weeks the manure was found to weigh 1,136 lbs., and measured 25 bushels, potato measure.

The subject of feeding stock is of the utmost importance to the farmer, and although the books are full of recommendations of the use of the cutting machine, being the assertions of anonymous correspondents, unsupported by facts upon the particular question submitted to your committee, they do not find that it has been discussed in the agricultural publications, or any facts stated that can have any application to it, except by inference. Of some of the most reliable statements in relation to feeding, they have made some extracts, as containing information which may be useful to be understood by the farmers of our county.

In the fourth volume of the "Memoirs of the Philadelphia Society for Promoting Agriculture," in a long communication from Richard Peters, entitled "Notices to a Young Farmer," he says, page 30: "Be particularly careful in expending, as you should be provident in raising, every species of provender for your stock of horses, cattle and sheep. A variety of food, and an orderly distribution of it, are more promotive of health and vigor in your domestic animals, than a lavish expenditure of any one species. Such as require previous preparation, should have it bestowed: both for profit and economy, *cut* or *chaff* your hay, straw, corn tops and blades, and even your stalks, with a powerful straw cutter; and you will save a great proportion, which is otherwise wasted, or passed through the animal without contributing to its nourishment. One bushel of chaffed hay at a mess, given in a trough, three times in twenty-four hours, is sufficient for a horse, ox or cow. A bushel of chaffed hay, lightly pressed, weighs from five to five and one-half pounds. A horse, or horned beast, thrives more on

15 pounds thus given, than 24 or 25 pounds as commonly expended (including waste) in the usual manner of feeding in racks, to which troughs, properly constructed, are far preferable. This practice has been now tested by experience; and the result accurately proved." The name of Judge Peters, then the President of the Philadelphia Society for Promoting Agriculture, and one of the best practical and scientific farmers of his day, would insure to his recommendations the highest consideration, but it is to be regretted, that he had not given the facts on which his opinion was founded. Farmers are generally so much prejudiced against all information that appears in print, that they will not believe, unless furnished with all the evidence in the case, from which they may draw their own conclusions.

In the Bath (England) Society's Papers, republished in the fourth volume of the Massachusetts Agricultural Repository and Journal, page 138, is a communication over the signature of Thomas Williamson. He says: "I have throughout the summer, kept my horses in the stable, feeding them with good hay and beans. My oxen have, on the contrary, always been turned out to grass, when liberated from their work; they have had the range of good pastures, and the benefit of some less valuable hay, previous to their going to their labor. My horses, five in number, have been regularly worked at the plough in pairs. The oxen, four in number, have worked in collars, drawing generally a stout Beverstone plough, or a large drag and scuffer; their labor has been constant and rather severe. As our meadows (mowing lands) began to fail us towards the end of September, owing to the quantity of stock upon them, it became necessary to allow the oxen more and better hay.

"The increased expenditure alarmed me, as the four oxen and the five horses, consumed no less than four tons within one month. This caused me to prohibit the use of hay in the racks, and to feed all the cattle with chaff; of which a boy can cut sufficient for daily use in two hours.

"My servants not only ridiculed the change, but so far as they dared, opposed, in an underhand manner, by various evasions and pretexts. Aided by the care and vigilance of the

young gentlemen with me, the system of chaff-feeding was fully established, and the quantity needful for the horses, and for the oxen, separately ascertained.

"One hundred weight of hay was found to yield twenty bushels of chaff pressed into the measure, and piled as high as it could be safely carried; consequently each bushel weighed about 5½ pounds. It was found that the five horses would eat twelve bushels of chaff during the twenty-four hours; and that the four oxen could consume an equal quantity in the same time. Ever since, the oxen have been fed with chaff only; they have very evidently improved in condition, as have also the horses, although their work has latterly been on heavier soil, and of course, more severe than formerly.

"Twenty-four bushels of chaff, at twenty to the cwt. (112 lbs.) amount to about 21½ tons yearly: which deducted from 48 tons (the quantity we were consuming within the year) gives a saving of about 26½ tons, or more than one-half.

"I have, however, carried the retrenchment further, by cutting in beanstalks, to the extent of about a quarter of the chaff. These being laid uppermost in the cutting trough, keep the hay well pressed, and cause it to be cut more regularly. Thus we now use about 25 cwt. of hay monthly, instead of four tons.

"It is customary in our quarter to throw beanstalks under cattle, a practice which cannot be too speedily abolished. Mine had suffered much by standing out full a month in the late rainy weather, yet all my cattle ate the chaff from them alone, without hesitation; indeed, rather in preference."

On page 400 of the same volume of the Massachusetts Agricultural Repository and Journal, is the statement by Benjamin Hale of the saving made by the use of the straw cutter employed to cut hay and straw as fodder for horses.

Mr. Hale was a proprietor of a line of stages then running between Newburyport and Boston. He says:—

"The whole amount of hay purchased from April 1 to October 1, 1816, (six months,) and used at the stage stable, was—

32 tons 4 cwt. 10 lbs. at $25 per ton, (the lowest price at which hay was purchased by him in 1816,) is . $800 00

From October 1, 1816, to April 1, 1817, whole amount

of hay purchased for and consumed by the same number of horses, viz.:—			
Straw, 16 tons 13 cwt. 3 qrs. 10 lbs., . .	$160 23		
Hay, 13 tons 4 cwt. 1 qr. 10 lbs., . .	350 00		
	$510 23		
Deduct, on hand April 1, 1817, by estimation, 4 tons more than there was October 1, 1816, at $25, ...	100 00	$410 23	
Saving by the use of a straw cutter four months of the last six months, or the dfference in expense in feeding with cut fodder and that which is uncut, .		389 77	
Whole amount of hay used for the horses of the Salem stage, twenty-five in number, from April 1 to October 1, 1816, 22 tons at $30 per ton, the lowest price in Salem, ...		660 00	
Whole amount consumed by the same number of horses from Oct. 1, 1816, to April 1, 1817 :—			
Straw, 15 tons 13 cwt., ...	$187 80		
Hay, 2 tons 15 cwt., ...	81 00	268 80	
Saving in using chopped fodder 5 months, . .		$391 20	
Total saving in using the straw cutter in Newburyport, 4 months, ...	389 77		
At Salem, 5 months, ...	391 20		
Total saving in both places, average time 4½ months, ...		780 97	

" The member of the Board of Trustees of the Massachusetts Agricultural Society to whom the above account was communicated by Mr. Hale, was informed by that gentleman that he used no more grain from October, 1816, to April, 1817, than was used from April, 1816, to October, 1816."

It will readily be perceived that the large amount of saving reported in this statement is greatly increased by the extreme high price of hay, during that year of scarcity. The saving of the last six months, over the former six months, although the cutter was in use but three-quarters of the time, is 53 per cent. Much of this saving is effected by the substitution of straw for hay, and a reduction in the quantity.

The quantity of hay used in Newburyport from April 1 to October 1, 1816, is 72,138 lbs.; from October 1, 1816, to April 1, 1817, is 37,390 lbs. straw, and 20,636 lbs. hay, being less in weight by 19½ per cent., and reduce the straw to its equivalent value in hay, and it would be 6,129 lbs., making the whole equal to 26,765 lbs. of hay, less than of the preceding six months by 64 per cent. in its nutritive properties.

The quantity of hay used in Salem from April 1 to October 1, 1816, was 49,280 lbs., from October 1, 1816, to April 1, 1817, was, straw 35,056 lbs., and 6,160 lbs. hay, whole weight 41,216 lbs., being less in weight for the last six months by 17¼ per cent., and reduce the straw to its equivalent value in hay, which would be equal to 5,763 lbs., and it would then be as hay 11,923 lbs.: less in value as hay for the making of muscle by 75¾ per cent. for the last six months, than for the former six months.

It would be extremely difficult to conjecture how so large a saving could be effected by the use of the cutter, without a very large allowance for waste during the first period. It is probable that the grain furnished all the nutriment required by the horses, and the straw was only wanted to fill up the stomach, for which it was as useful as hay.

It is much to be regretted that in this statement of Mr. Hale, all the facts in the case are not given; the horses should have been weighed at the commencement and at the close of the term of trial, that their relative condition might have been known; the quantity and quality of the grain, and the manner in which it was given, should have been stated, that the public might have the whole evidence in the case, on which they might have formed their own opinion. It might have appeared upon more careful examination, that these horses for at least a portion of the time were overfed, and that much of the food given them passed through them in an undigested state, and of course was of no benefit to them, or in other words was wasted. It is difficult on any other conjecture to account for the great difference on the two sides of the account. It is not intended to intimate that Mr. Hale intentionally withheld any facts within his knowledge; he doubtless stated all the circumstances of which he was informed by those in his employ, and finding that his savings had been so great, he was

disposed to give the public the benefit of the information, supposing it to be as full as could be expected.

This statement of Mr. Hale has been copied into many of the agricultural papers with remarks of approval, which has occasioned disappointment on the part of those who have adopted the use of the cutter and have not realized so great benefits, as by this account, they were induced to expect. For these reasons, we have been disposed to examine it more particularly, that farmers might be induced fully to inquire into all the circumstances belonging to a case before they form a conclusion either for or against it.

In the New England Farmer, vol. 12, page 233, is the following communication:—

"Beverly, January 25, 1834.

"Mr. J. R. Newell—Dear Sir,—It is with pleasure that I comply with your request, asking the result of my experience on the subject of feeding stock. My stock consists of fifty-one head, viz.: eight horses, six oxen, thirty-five cows, and two yearlings. This stock was fed in the usual way, with English, salt and fresh meadow hay, with meal and potatoes as their condition required, to the 1st of December last, at which time I commenced chopping my hay. In giving the result of my experiment I must in some measure ask the privilege of a Yankee, viz.: that of guessing; but in this case I think I can guess pretty correctly, as much of the hay has been loaded in consequence of having to remove it from one barn to the other, and calculating the number of days a load would last, the result is as follows:

700 lbs. English hay, at $16 per ton, .	$5 60	
200 lbs. Fresh " 4 " .	40	
100 lbs. Salt " 8 " .	40	
3 bushels corn meal, ...	2 25	
8 " long red potatoes, . .	1 60	
	———	$10 25 per day.
400 lbs. Eng. hay, chopped, $16 p. ton,	$3 20	
100 lbs. Fresh " 4 " .	20	
100 lbs. Salt " 8 " .	40	
3 bushels corn meal, ...	2 25	
4 " long red potatoes, chopped, .	80	

140 gallons pure water, . . .	$0 00	
1 man at $8 per month, . . .	31	
Board of man, at $1 50 per week, .	23	
		$7 39 per day.
Balance in favor of straw cutter, . .	$2 86	" "

" In addition to the above balance may be added an increase of six gallons of milk from twenty-five cows then in milk, and likewise something for the improvement of the condition of my whole stock.

Yours respectfully,

Amos Sheldon."

In a communication of Finlay Dun, Jr., of Scotland, to the Highland Society of Scotland, for which he received a gold medal, he says in relation to the quantity of food to be given to cattle: " It is found from experience that a healthy ox consumes nearly one-fifth its own weight of hay, straw, and such other dried food. Cattle, fifty stone imperial weight, allowed straw, *ad libitum*, will consume from 150 to 180 lbs. of turnips daily." Boussingault considers as a sufficient allowance six pounds of mixed food or four pounds of hay for every 100 lbs. of living weight; or otherwise, about thirty pounds per day of a mixture of equal parts of grass and hay for cattle of thirty stone imperial weight. The food of cattle requires to be of a certain *bulk*. Without this, digestion and assimilation are not properly performed, even although the food be sufficiently nutritive. In order that digestion be effectually performed, the stomach must have certain mechanical stimulus, which the bulk of the food naturally imparts to it. But the quantity of food necessary to an ox must of course be greatly modified by various circumstances. It is evident, for instance, that young animals, in proportion to their size, require a larger quantity and a better sort of nutriment than adults. This depends upon their having to increase the size of all the parts of their frame, as well as to repair the continual waste, which is also greater in them, than in older animals, on account of their taking a greater amount of exercise.

" At all ages exercise greatly increases the demand for food, and prevents the accumulation of fat. A man, when employed in active out-door labor, requires a much more nutritive

diet than when pursuing a sedentary occupation within doors. Working cattle also require a larger quantity and a more nutritive quality of food than similar animals confined to courts or tied in the stall. Wild animals, and those allowed to roam about, rarely become fat. It has been remarked by Liebig, that cows driven long distances to pasture, unless they get an extra supply of food, yield milk poor in caseine—the materials which would otherwise have formed that constituent of the milk being used in repairing the waste of the muscles and other parts employed in locomotion."

Professor Playfair, in a lecture delivered before the Royal Agricultural Society, on the application of Physiology to the rearing and feeding of cattle, says: "It is known that the vital forces decrease when the body is exposed to a certain degree of cold; and when this is sufficiently intense, that they are either suspended or are altogether annihilated. But the chemical force, oxygen, is condensed or increased in its power by such agencies, and it therefore now reigns triumphant. Vitality (the cause of increase and of sustenance) being removed, chemical affinity (the cause of waste) acts upon those tissues which have been freed from the dominion of vitality, and effects their destruction. Hence it is, that cattle do not fatten so well in cold weather as in hot. The chemical powers being now in the ascendant prevent the increase of mass. We know, also, that the intervention of cold weather in summer either wholly arrests, or greatly retards, the fattening of our cattle. But as the decrease of vitality has been occasioned by a diminution of the temperature of the body, it is obvious that by an elevation of the temperature, vitality would be enabled to resume its proper functions. It has been shown that the food of various countries is more or less combustible, according to the temperature of the climate; and proof was adduced that the amount of the food consumed varied also according to the temperature. The animal body is a furnace, which must be kept up to a certain heat in all climates. This furnace must, therefore, be supplied with more or less fuel, according to the temperature of the external air. If then, in winter, we wish to retain the vital functions of our cattle in a proper degree of activity, we must keep up the heat of their bodies. This we may do in two ways. We may either add more fuel (food)

to the furnace, or we may protect their bodies from the cold. Warmth is an equivalent for food, which may thus be economized. But I wish to give you facts, and not assertions; and as a proof of the view I have now given you, I will cite the following experiment, which was made by the Earl of Ducie, at Whitfield farm.

"One hundred sheep were folded by tens in pens, each of which was 22 feet in length by 10 feet in breadth, and possessed a covered shed attached to it of 12 feet in length by 10 in breadth. They were kept in there from the 10th of October to the 10th of March. Each sheep consumed on an average 20 lbs. of swedes daily. Another hundred were folded in pens of a similar size, but without sheds attached. They were kept during the same time, and their daily consumption of swedes amounted to 25 lbs. each. Here the circumstances were precisely similar with respect to exercise, the only difference being that the first hundred sheep had sheds into which they might retire, and thus be partially protected from the cold.

"This partial protection was equivalent to a certain amount of food, and consequently we find that the sheep enjoying this protection consumed one-fifth less food than those sheep which were left entirely exposed to the cold. In the last case the consumption of the additional food arose wholly from the necessity of adding more fuel (food) to the furnace of the body, in order to keep up its normal temperature. This was proved from the circumstance, that those sheep which enjoyed the protection had increased three lbs. each, more than those left unprotected, although the latter had consumed one-fifth more food.

"I wish particularly to impress upon you that warmth is an *equivalent* for food, and that therefore food may be economized by protecting cattle from the cold. The honey stored up by bees is for the purpose of serving as fuel to keep up the heat of their bodies during the winter. Now it has been found that when two hives of bees are placed in one hive during winter, that they actually consume less honey than each hive would have done separately. You will easily perceive the explanation of this circumstance from the facts which I have already stated. Their close contiguity prevents a rapid escape of the heat of their bodies, and consequently less fuel (honey) is

required to keep up the temperature. This case forms a very distinct proof that warmth is an *equivalent* for food.

"But I need only refer you to the results of your own experience, for every breeder of cattle must be aware, in the wintering of young stock, that they thrive better, with less consumption of food, when kept well sheltered from cold and wet."

Of the advantage in cutting hay for stock, we have in this country but little evidence. The general opinion of farmers has been in favor of cutting hay, where any considerable portion was of inferior quality, especially if it was intended to feed meal with it, that the whole might be mixed together, and less would be wasted. So some experiments have been had in feeding cut hay and straw together, but the trials have not been carried out so fully as to show the advantage (if any) in cutting food for stock *in the quantity eaten*, and if any, in what it consisted. Whether it would pay to cut *good* hay, charging for the labor of doing it, is a question of which there is much difference of opinion. Some have believed that by the cutting of the hay, the digestion was aided; the animal being able to fill itself in less time, would have more leisure to chew the cud, thereby more completely extracting the nutritive qualities from the hay and derive more benefit from it. Others have contended that the animal eating the same quantity of hay would be prejudiced in having it cut—that in the eating of the long hay the saliva which assists in digestion would be more intimately mixed with the food, and more nourishment would be extracted from it. This is denied by the advocates of cutting. They claim that the gastric juice is mixed with the food when chewing the cud, and the animal having more time for that operation would realize most benefit from its food. That there might be some slight benefit in cutting good hay, as there was less liability of its being wasted in getting a portion of it under their feet, was admitted; but it was said that this would be very inconsiderable, if the cattle were judiciously fed in small quantities and often; and it was contended that there could be no other advantage in cutting hay, than in preventing waste in some degree.

The several statements of Messrs. Demond, Dodge, Lincoln, and Hawes are appended to this report, as a part thereof,

from which the facts will appear, from the statements made by them.

Charles B. Demond's Statement.

Cow No. 1, seven years old, dried off about 10th December; calved 4th March, 1851, expected to come in about 9th March, 1852. Trial commenced January 1, 1852; weight at commencement, 870 lbs., at close of trial, 931 lbs., mean weight, 904½ lbs.; gain in eight weeks, 61 lbs.; on cut hay, 38 lbs., on uncut hay, 23 lbs.; eat, in eight weeks, 1,174 lbs. hay; 611 lbs. cut hay and 563 lbs. uncut hay.

Cow No. 2, seven years old, dried off about 10th December last; calved 28th February, 1851, expected to come in about 9th March, 1852. Trial began January 1, 1852; weight at commencement, 850 lbs., at end of trial, 909 lbs., mean weight, 879½ lbs.; gain in eight weeks, 59 lbs.; on cut hay, 26 lbs., on uncut hay, 33 lbs.; eat, in eight weeks, 1,146 lbs.; 560 lbs. cut and 586 lbs. uncut hay.

In addition to the hay, each cow eat one-half peck turnips per day, being seven bushels to each cow, which is equivalent to 58 lbs. hay in value, making cow No. 1 equal to 1,232 lbs., provided the turnips were the common flat turnips, and cow No. 2, 1,204 lbs., which would make their daily food, as in hay, equal to $\frac{29}{20}$ per cent. of their live weight, or an addition of one pound in weight for every $20\frac{3}{10}$ lbs. hay, or its equivalent, eaten.

Harvey Dodge's Statement.

Near steer three years old this spring. Trial commenced January 3, 1852; weight, at commencement, 1,075 lbs., at close of trial, 1,125 lbs., mean weight, 1,100 lbs.; gain in eight weeks, 50 lbs.; on uncut hay, 55 lbs., loss on cut hay, 5 lbs.; eat, in eight weeks, 916 lbs. hay; 447 lbs. cut hay and 469 lbs. uncut hay.

Off steer, of the same age; trial began at the same time; weight at commencement, 1,080 lbs., at close of trial 1,160 lbs., mean weight, 1,120 lbs.; gain in eight weeks, 80 lbs.; on cut hay, 75 lbs., on uncut hay 5 lbs.; eat, in 8 weeks, 949 lbs. hay; 469 lbs. cut and 480 lbs. uncut hay.

During the eight weeks each steer had two quarts meal per

day, which is equivalent to 293 lbs. hay, making, for near steer, equal to 1,209 lbs. hay, and for off steer, equal to 1,242 lbs. hay; their daily consumption of food was, in hay, equal to two per cent. of their live weight, or one pound in addition of weight to every $18\frac{85}{100}$ lbs. of food equivalent to hay eaten.

William S. Lincoln's Statement.

Cow Beauty, four years old 13th May 1852; calved 14th June, 1851, in milk, expected to have another calf June 30, 1852. Trial commenced 9th January, 1852; weight at commencement, 915 lbs., at close of trial, 1,030 lbs., mean weight, $967\frac{1}{2}$ lbs.; gain, in eight weeks, 125 lbs.; on cut hay, 100 lbs., on uncut hay, 25 lbs.; eat, in eight weeks, $1,354\frac{3}{8}$ lbs.; $685\frac{7}{8}$ lbs. cut, and $668\frac{1}{2}$ lbs. uncut hay.

Cow Cherry, four years old this spring; calved on the 20th June, 1851, in milk, expected to have another calf 14th May, 1852; weight, at commencement of trial January 9, 1852, 815 lbs., at close of trial, 850 lbs., mean weight, $832\frac{1}{2}$ lbs.; eat, in eight weeks, $926\frac{3}{4}$ lbs.; $464\frac{1}{8}$ lbs. cut hay and $462\frac{5}{8}$ lbs. uncut hay; gain, in eight weeks, 35 lbs.; 30 lbs. on cut hay and 5 lbs. on uncut hay.

In addition to the hay, each cow eat 648 lbs. carrots, equal to 171 lbs. hay, which would make, for Beauty, equal to $1,525\frac{3}{8}$ lbs. hay; for Cherry, equal to $1,097\frac{3}{4}$ lbs. hay. In the mean time Beauty gave $413\frac{3}{8}$ lbs. milk; 229 lbs. $4\frac{1}{2}$ oz. on cut hay, and 184 lbs. $\frac{1}{2}$ oz. on uncut hay; and Cherry gave 442 lbs. 15 oz. milk; 209 lbs. $13\frac{1}{2}$ oz. on cut hay, 233 lbs. and $1\frac{1}{2}$ oz. on uncut hay. The daily food of Beauty was equivalent to $2\frac{8}{10}$ per cent. of her live weight, and that of Cherry, to $2\frac{4}{10}$ per cent. The gain of the two cows was one pound of flesh for every 16 $\frac{31}{100}$ lbs. of food equivalent to hay eaten.

Amherst H. Hawes's Statement.

Near ox, six years old this spring; trial commenced 15th December, 1851; weight, at commencement of trial, 1,520 lbs., at close of eight weeks, 1,646 lbs., at close of eleven weeks, 1,628 lbs.; mean weight for eight weeks, 1,583 lbs., eleven weeks, 1,574 lbs.; gain, in eight weeks, 126 lbs.; 120 on cut, and 6 lbs. on uncut hay; gain, in eleven weeks, 108 lbs.; 122

lbs. on cut hay, and loss on uncut hay, 14 lbs.; having eaten in eight weeks, 2,106 lbs. hay; 1,078 cut, and 1,028 lbs. uncut hay; and in eleven weeks, 2,925 lbs. hay; 1,351 cut, and 1,574 lbs. uncut hay.

Off ox, of same age, and time of trial same; weight, at commencement of trial, 1,500 lbs., at close of eight weeks, 1,601 lbs., at end of eleven weeks, 1,617 lbs.; mean weight for eight weeks, 1,552 lbs., for eleven weeks, 1,558½ lbs.; gain, in eight weeks, 104 lbs.; on cut, 17 lbs., on uncut hay, 87 lbs.; gain, in eleven weeks, 117 lbs.; on cut hay, 32 lbs., on uncut hay, 85 lbs.; having eaten in eight weeks, 2,106 lbs., 1,028 lbs. cut, and 1,078 lbs. uncut hay; and eaten in eleven weeks, 2,925 lbs., 1,574 lbs. cut, and 1,351 lbs. uncut hay.

The daily food of these cattle has been, in hay, about $2\frac{4}{10}$ per cent. of their live weight, or one pound in addition of weight to every $18\frac{26}{100}$ lbs. of hay eaten.

The eight animals with which the before mentioned trials were made, eat in eight weeks:—

5,343 lbs. cut hay,
261 lbs. equivalent,
} and gained in weight 401 lbs., or $13\frac{97}{100}$ lbs. hay, to 1 lb. in weight gained.

5,604 "

5,335⅓ lbs. uncut hay,
261 " equivalent,
} and gained in weight, 239 lbs., or 23 $\frac{41}{100}$ lbs. hay, to 1 lb. in weight gained.

5,596⅓ "

Greater gain on cut hay than on uncut hay, by 68 per cent., and only $7\frac{7}{8}$ lbs. more cut hay consumed.

Mr. Lincoln's two cows eat 1,150 lbs. cut hay, and gave $439\frac{1}{8}$ lbs. milk; and eat $1{,}131\frac{1}{3}$ lbs. uncut hay, and gave $417\frac{1}{8}$ lbs. milk; greater yield of milk on cut, than uncut hay, 22 lbs. or $\frac{59}{20}$ per cent., and only $18\frac{7}{8}$ lbs. cut hay in addition consumed.

These experiments seem fully to have established the fact that a much greater benefit is derived from cutting good hay, as food for cattle, than an equivalent for the expense of cutting, if obliged to hire labor for that purpose. These experiments were made under unfavorable circumstances. It is understood that the cattle were unused to eat cut hay, and although some of the cattle eat the cut hay readily, by the greater part it

was refused until hunger induced to the consumption of it. Another objection—the term of each separate trial was too short; if the whole trial was to have continued but eight weeks, it would have been better to have divided it into two periods of four weeks each, than into four periods of two weeks each. There was a loss at each time of changing the food, by a part of the cattle not eating it so freely. It is now become manifest that the cutter can be profitably employed in chaffing hay, whether the whole be good, or a portion of inferior quality, straw, cornstalks and buts. Of the latter, cornstalks and buts, they are believed to be intrinsically of more value, than they have usually been estimated; when properly cured, they afford very nutritious food, of which cattle are fond, and if passed through a cutter, very little will be rejected. If the stalks and buts be not of a good quality, it will still be expedient to cut them, the cattle will eat a larger proportion, and what is refused by them will be more readily decomposed. Those who have been compelled, with much hard tugging and pulling, to shovel over manure in which uncut cornstalks and buts have been mixed, will readily admit that the use of the cutting machine would have saved them much hard work, so much so as well to pay for the labor of cutting the stalks and buts.

It is understood that a man with a fair hand cutting machine can easily cut, during any of the short days of winter, a ton of hay, and not have a hard day's work at that.

Those who have large stocks of cattle, will find it profitable to make use of some animal power (horse or ox), to aid in cutting their food for them. The same power may be used in cutting vegetables, sawing wood, &c. The quantity of food required for the support of cattle, as established by these experiments, although no greater than is stated in some agricultural publications, is believed to be considerably larger than has been usually estimated by the farmers in this vicinity. The steers of Mr. Dodge requiring but little for additional growth, beyond their support in good condition, consumed in hay, or its equivalent, daily, not less than two per cent. of their live weight; the dry cows of Mr. Demond, for their own support and for the support of the calves with which they were pregnant, demanded for their food an amount of hay, or its equivalent, equal to two

and a third per cent. of their live weight, and this proportion would be constantly increasing until they dropped their calves. The cows of Mr. Lincoln required a sufficiency of food for their own support, the supply of milk they were giving, and the sustenance and growth of the calves within them, of which they would be delivered at different periods. The one consumed in food or its equivalent in hay, two and four-tenths per cent., and the other two and four-fifths per cent. of their live weight. Of the oxen referred to in the trial by Mr. Hawes, they required more food in consequence of their being employed in labor instead of being at rest, and more in consequence of being exposed to the inclemency of the weather for a part of the day, instead of being in the barn protected from the cold. The consumption of food by them was two and four-tenths per cent. of their live weight. These facts are important for the information of every farmer that may be enabled to calculate with more precision whether he has sufficient sustenance for his stock through the winter, making a liberal allowance for a late spring. No man can afford to stint his stock in their food. Should he, at any time have reason to fear that his supply of hay, straw, &c., may be insufficient to carry his stock well through the season, it will be far better for him to sell a part at a reduced price, or even to give them away, than to allow them to become poor. An ox or a cow poor in the spring, will require nearly the whole of the summer months in good feed to recover its condition, and its use of little benefit to the owner. With young cattle, to be stinted in their growth through poverty, is an irreparable injury.

Of the manner adopted by Mr. Dodge in the care of his steers, the committee cannot approve. After the first week they were confined wholly within the barn, without being allowed to go out for drink or for air and exercise. They were fed twice each day, and had water given to them but once each day. That cattle closely confined will take on fat more readily, is undoubtedly true, but in this instance the tendency to increase in flesh was counteracted by their not being fed and watered so frequently as they should have been. Cattle should have food with much regularity at least three times a day, and during the long winter nights, particularly where the barn is so con-

veniently located with reference to the house as is that of Mr. Dodge, a fourth time (in the evening) would be preferred. Where the food for twelve hours is laid before the animal at one time, the quantity is so great that much of it is necessarily blown upon for a considerable time, and is not afterwards readily eaten. An animal deprived of drink twenty-four hours would become quite thirsty, and would, when allowed to drink, take into the stomach a large quantity of water, which would occasion suffering, both from the coldness, until it became warmed by the internal animal heat, and also by the distension of the stomach which it would occasion. It has been found that when cattle can drink at pleasure, they drink often, and in small quantities. It is desirable to conform to the natural habits of our animals, so far as is practicable. This mode of feeding as applied to the steers, is not the manner Mr. Dodge would adopt for his whole stock, or which can be recommended to farmers to pursue. The statement of Mr. Dodge contains much valuable information, not only in relation to feeding, but also as to the amount of the solid manure voided by the cattle in proportion to the hay consumed, which it is important should be more generally known by farmers: and to this the liquid manure is to be added, in order to estimate the loss occasioned to a farm in selling off the hay and straw grown upon it.

The committee, after having carefully considered the several statements of the different competitors, have awarded the first premium of $30 to William S. Lincoln; the second premium of $20 to Amherst H. Hawes. As to the statement of Mr. Hawes, the committee had at first some doubt whether it was proper for them to take it into consideration, he not having complied with all the requirements of the society, in having failed to give the average of the temperature in the barn as indicated by the thermometer. Upon further examination, they found that the two oxen stood side by side when in the barn, and when out, worked side by side in the yoke, and were therefore "constantly in the same temperature," and equally affected by the warmth or cold to which they were exposed, the average degree of which could only be given as to the barn. It would therefore be very imperfect as applied to this case. That the

cold to which they were exposed, the average of which could not be given, had an important bearing upon the amount of food required for the support of the cattle, and the uses to which that food must be applied, the committee did not doubt; and adjudged that they had been furnished in this case with all the information of which they could have availed themselves, that the omission could not have had any influence in their decision; and that they would therefore receive the statement as a substantial compliance with the conditions imposed for the trial, and consider it accordingly.

The committee would fail in the discharge of their duty, did they omit to express their strong disapprobation of competitors assuming to decide whether the regulations of the society are judicious as applied to their case, and non-complying with such rules as they do not approve: that is a question not submitted to them; they should strictly comply with all the requirements, and furnish the desired information to be used in such manner by the judges, as in their discretion they may think proper.

The duty of the chairman was very easy, as the decision of the committee was made without the necessity of an expression of an opinion from him. He would, however, add, that he fully concurs with them in the result to which they arrived. He was charged by his associates with the duty of expressing to Messrs. Demond and Dodge their thanks, and those of the society they represent, for the time and trouble they have devoted to the attainment of information which they believe to be highly valuable to the agricultural community, and from which they hope that these gentlemen will derive benefits which will more than compensate them for the inconvenience these experiments have occasioned them.

In relation to the relative value that straw, turnips, carrots, and Indian corn meal, bear to good hay, the committee have preferred to use the tables adopted by distinguished writers on agriculture, than to rely on their own opinions. They are, however, strongly impressed with the belief that in this case the value of carrots and corn meal, particularly the latter, is estimated too low, and this opinion receives confirmation from the result of the experiments of the Hon. John Brooks. Had

they adopted their own estimates of the value of these articles, the awards would have been the same.

All which is respectfully submitted.

By order of the committee,

JOHN W. LINCOLN, *Chairman.*

Charles B. Demond's Statement.

Gentlemen,—Not being fully satisfied in my own mind, as to the advantages or disadvantages of cutting hay as food for stock, I was encouraged by the society's premium to try an experiment. The following are the results. The trial was made with two cows, each seven years old, of native breed, and ordinary size; they were dried about the 10th of December, and kept during the month on coarse fodder, meadow hay, oat straw, &c. On the 1st day of January the experiment commenced. No. 1 calved the 4th day of March, 1851. No. 2 calved the 28th of February, 1851. Both cows are expected to come into the dairy on the 9th of March, 1852; they were fed on dry hay, with a half peck of turnips per day.

No. 1.

Fed on cut hay, 1st two weeks,	Weight, 870 lbs. Hay eaten, 316 lbs. Gain in weight, 24 lbs.
Long hay, 2d two weeks, . .	Weight, 894 lbs. Hay eaten, 284 lbs. Gain, 12 lbs.
Cut hay, 3d two weeks, . . .	Weight, 906 lbs. Hay eaten, 295 lbs. Gain, 14 lbs.
Long hay, 4th two weeks, . .	Weight, 920 lbs. Hay eaten, 279 lbs. Gain, 11 lbs.

Gain during trial, 61 lbs.

No. 2.

Fed on long hay, 1st two weeks,	Weight, 850 lbs. Hay eaten, 298 lbs. Gain in weight, 17 lbs.

Cut hay, 2d two weeks, . . .	Weight, 867 lbs. Hay eaten, 308 lbs. Gain, 17 lbs.
Long hay, 3d two weeks, . .	Weight, 884 lbs. Hay eaten, 288 lbs. Gain, 16 lbs.
Cut hay, 4th two weeks, . . .	Weight, 900 lbs. Hay eaten, 252 lbs. Gain, 9 lbs.

Gain during trial, 59 lbs.

During the 3d week of trial, No. 1 was accidentally hooked by another animal in the abdomen, which, I think, must have caused her pain, and she did not do as well, perhaps, as she otherwise would have done. No. 2, during the last week of trial did not appear to have so good an appetite as usual, the hay was a little finer, and when cut, she did not relish it as well. The hay used was a mixture of timothy and redtop, about equal. The animals were kept in the barn all the time, (excepting being turned out to water twice a day,) at a temperature averaging 41 degrees. The turnips were fed to them in common with my other cattle in the morning. The cows are not fat, but in what would be called very decent order. The time of weighing was in the morning, and before they had drank. Changing the cows from poor to good hay will account, perhaps, for their consuming more hay, and gaining more in weight during the first period of trial than afterwards. The hay was weighed and the animals fed by myself, and I have endeavored to be as accurate as possible.

Grafton, March 2d, 1852.

Harvey Dodge's Statement.

Sir,—The two animals on which I have been experimenting for eight weeks during the last winter, and on which your premium is claimed, are a pair of half blood North Devon steers, two years old past, or three years coming, dark red color, well built, and very similar in all respects to each other. From 10 to 35 lbs. in weight is the greatest difference in the two at any

time for four months past. No difference in keeping has been permitted, at any time, to grow one faster than the other. They came from the pasture the first of winter in good condition, and were fed on good hay, corn fodder, and half a bushel of flat turnips per day, to the 4th of January. They were then put into a close stable by themselves, one tied eight feet from the other; boxes, or close cribs, were so fixed that it was impossible for them to waste their own, or get each others food. Water was given them in the stable, and they were not permitted to go out of the stable except to be weighed once in two weeks, and one *day* for *work*, and this was during the first week of my experiment, and will show, conclusively to my mind, why they fell off in weight during the first two weeks. They had been unaccustomed to the yoke and confinement in the stable, and being very ambitious, worked beyond their strength, and evidently did not recover themselves before the end of the first two weeks. Their food was regularly given them at 8 o'clock in the morning, and 4 in the afternoon, and feeding was permitted after the first week only at these two stated times. After the first week, water was given but once a day, (at noon); though repeatedly offered at other times it was generally refused after the first week. A full bucket of water was weighed, and the number minuted, and the fractions weighed back and minuted, and an average taken at the end of each two weeks; a thermometer was kept during the eight weeks centreways between where the steers were tied, in a box for the purpose fastened to the scaffold floor, and consulted at 8 and 4 o'clock, (feeding time,) the degrees minuted, and an average taken at the end of each two weeks, being weighing day. The quality of hay was an average of what is cut on my farm, about equal portions of herds-grass and red-top, with a small quantity of clover mixed. A half bucket of water was sprinkled on to their hay both cut and uncut after being put into their crib, and the meal sifted on to the wet hay at each feeding, (morning and evening,) which feed was generally consumed before the next feeding time; if not all consumed a less quantity was placed in the box for the next meal, though they experienced no want of more food at any time during the trial than what they received; in short, they had enough, and no more. The nigh steer would have preferred

long, or uncut hay, to cut, while the off steer seemed to prefer cut feed from the very commencement, and so continued through the different times he was on this feed; and this circumstance accounts conclusively to my mind why the off steer took on a greater share of weight during the times he was on cut feed; and the nigh steer made his greatest weight on long feed, (owing to his disrelish for cut feed, neither being accustomed to cut feed before this experiment,) though I have no doubt but what he would have become as fond of cut feed as the off one in a short time, as most all animals do prefer cut to uncut after being accustomed to it. I give below a statement of the different experiments which were made with great care, and recorded at the time.

Experiment No. 1, commenced January 3, 1852.

Nigh steer weighed 1,075 lbs., cut hay 194 lbs., and 2 qts. of corn meal per day, making 28 qts. for 14 days. Temperature —average past two weeks, 28 degrees above.

Off steer weighed 1,080 lbs.; long hay consumed, 222 lbs., and 2 quarts of corn meal per day. For the last two weeks, average temperature 28 degrees above. Water drank by the pair after returning from weighing, 60 lbs.; average for the two, 70 lbs. per day during the trial.

Experiment No. 2, commenced January 17, 1852.

Nigh steer weighed 1,065 lbs.; consumed 215 lbs. of hay, uncut, 2 quarts of meal per day for the last two weeks; temperature, 18 degrees.

Off steer weighed 1,050 lbs.; cut hay, 215 lbs.; meal, 2 qts. per day; temperature, 18 degrees. The two steers drank, after weighing, 93 lbs. water; average water for 14 days, 74 lbs. per day.

Experiment No. 3, commenced January 31, 1852.

Nigh steer weighed 1,090 lbs.: cut hay, 253 lbs.; 2 qts. meal per day; temperature, 32 degrees for the last two weeks.

Off steer weighed 1,070 lbs.; uncut hay, 258 lbs. consumed, and 2 qts. of meal per day; temperature, 32 degrees. Water drank after being weighed, 63 lbs.; average water for the two weeks, 70 lbs. per day.

Experiment No. 4, commenced February 14, 1852.

Nigh steer weighed 1,095; uncut hay, 254 lbs.; 2 qts. meal per day; temperature, 37 degrees. Water drank after weighing, 33 lbs.

Off steer weighed 1,105 lbs.; consumed 254 lbs. cut hay, 2 quarts meal per day; temperature, 37 degrees above. Water drank after weighing, 43 lbs.; average water drank by the two steers, 79 lbs. per day for the last two weeks.

February 28. Nigh steer weighed 1,125 lbs.; water drank after being weighed, 32 lbs.

Off steer weighed 1,160 lbs.; drank 36 lbs. water after being weighed.

It will be seen by reference as above, that 949 lbs. of long hay was consumed, and 916 lbs. of cut, making a difference in favor of cut feed of 33 lbs. of hay. In experiment No. 1, the nigh steer on cut feed lost but 10 lbs., while the off steer on long feed lost 30 lbs. In experiment No. 2, nigh steer gained 25 lbs. on long, off steer gained 20 lbs. on cut. Experiment No. 3, nigh steer gained 5 lbs. on cut, off steer 35 lbs. on long. Experiment No. 4, nigh steer gained 30 on long, off steer 55 on cut, showing the whole gain, after taking out the loss on experiment No. 1, to be 130 lbs. 70 lbs. of this gain was made by cut, and 60 lbs. by long feed,—showing a difference in favor of cut feed over uncut, of 33 lbs. of hay and 10 lbs. of live weight.

Sutton, March 15, 1852.

STATEMENT OF WILLIAM S. LINCOLN,

To the Committee of the Worcester Agricultural Society on Feeding.

I forward to you a transcript of my Day Book as the best report I can make of my experiment "in determining the advantages or disadvantages of cutting hay as food for stock.

Date.	Temperature.					Beauty.									Cherry.									
						Food.			Yield in Milk.			Live Weight.			Food.			Yield in Milk.			Live Weight.			
	Morning.	Noon.	Evening.	Daily Average.	Av'ge for whole period.	Roots.	Cut Hay.	Daily Average.	Morning.	Evening.	Daily Average.	At commencem't	At end.	Gain.	Roots.	Long Hay.	Daily Average.	Morning.	Evening.	Daily Average.	At commencem't	At end.	Gain.	Loss.
1852.	*Deg*	*Deg*	*Deg*	*Deg*								905									815			
Jan. 9,	33	42	37	37 1-3		12	34		4—4	4—8					12	20		4-12	4—7					
" 10,	42	42	43	42 1-3		12	28		5—2	4—8					12	26		5—	4—3					
" 11,	45	47	43	45		12	27		5—3	4—8					12	25		5—	4—7					
" 12.	38	38	33	36 1-3		12	45		5—5	4—8					12	30		4-15	4—7					
" 13,	38	35	37	36 2-3		12			5—2	4-13					12	45		4—8	4—9					
" 14,	32	34	34	33 1-3		12	63		4-15	4-13					12			4-15	4—7					
" 15,	37	44	43	41 1-3		12			5—6	4-10					12			5—3	4—5					
" 16,	32	34	34	33 1-3		12			5—3	4-11					12			4-14	4—5					
" 17,	33	30	34	32 1-3		12	95		5—2	4-14					12			4-14	4—6					
" 18,	32	31	28	30 1-3		12			5—2½	4					12			4-14½	4					
" 19,	25	26	26	25 2-3		12			5—5	4-12					12	72		4-14	4—5					
" 20,	20	22	28	23 1-3		12			5—3	4-10					12			4-12	4—5					
" 21,	26	32	34	30 2-3		12	45 1-2		5	4-12					12	30		4-14	4—4					
" 22,	30	28	28	28 2-3	33¾	12			5—3	4-11½					12			4-15	4—6					
" 23,											9 lbs.						16 lbs.							
						168	337 1-2	24 lbs. 15-7oz	71—7½	64-10¼	11 4-7 oz.		960	55 lbs.	168	228	4 4-7	68—6½	60-12	8 lbs. 3 4-7		829	51bs	

STATEMENT OF WILLIAM S. LINCOLN—Continued.

Date.	Temperature.					Beauty.									Cherry.									
						Food.			Yield in Milk.			Live Weight.			Food.			Yield in Milk.			Live Weight.			
	Morning.	Noon.	Evening.	Daily Average.	Av'ge for whole period.	Roots.	Long Hay.	Daily Average.	Morning.	Evening.	Daily Average	At commencem't	At end.	Gain.	Roots.	Cut Hay.	Daily Average.	Morning.	Evening.	Daily Average.	At commencem't	At end.	Gain.	Loss.
Jan. 23,	24	32	33	29 1-3		12	24		4–12	4–10		960			12	39		4–12	4—5		820			
" 24,	26	36	39	33 2-3		12	74		4–10	4—7					12			5	4—7					
" 25,	36	42	50	42 2-3		12			4–13	4—8					12	79		5—2	4—4					
" 26,	44	51	50	48		12			4–11	4—8					12			5	4—4					
" 27,	40	45	41	42		12			4—8	4—9					12			4–15	4—7					
" 28,	41	32	44	39		12	68		4–14	4—4					12	14		4–12	4—4					
" 29,	47	52	52	50 1-3		12	47—8		4–11	4—8					12	49 1-2		4–11	4—4					
" 30,	47	52	48	49		12			4—8	4—7					12			4–12	4—8					
" 31,	43	40	36	39 2-3		12	78		4—2	4—6					12	77 1-2		4–12	4					
Feb. 1,	36	33	38	38 1-3		12			4—3½	4—1½					12			4—8	4—1					
" 2,	40	44	40	41 1 3		8			4—1½	4—1					8			4—9½	4—2					
" 3,	36	40	46	40 2 3		8			3—8½	4—3					8			4—1	4—3					
" 4,	37	46	46	43		8	45		4	3–11½					8			4—8	4—1½					
" 5,	44	51	50	48 1-3		8	5	22	4—7½	3 15					8	10 1-2	19 lbs. 4 oz.	4—7	4–14½	8 lbs. 14 3 7 oz.		815		
" 6,					41 1-7°	152	321	14 6-7	61-14	60—3	8 11½		965	5 lbs.	152	269–8		63—0½	60—1					5 lbs
							Cut Hay									*L. hay*								
" 6,	47	51	51	49 2 3		8	63		3—7	4—3		965			8	71–2		4—2	3 12½		815			
" 7,	42	42	45	46 1-3		8			3—7½	3—8½					8			3–14	3—6½					
" 8,	40	36	43	39 2-3		12			3—1½	3–12					12	20		3—8	3–13½					
" 9,	36	40	47	41		12	75		3—9	3—1½					12			3–12½	3–12					

Feb. 10,	44	53	50	49		12			3-11½	3—7					12			4—1½	3-11					
" 11,	54	53	59	55 1-3		12	86		3-11	3—6½					12	74-2		4-16	3-13					
" 12,	53	47	44	48		12			3-12	3—7					12			3-15½	3-10½					
" 13,	34	44	41	39 2-3		12			3—8	3-10½					12			3-15	3-11					
" 14,	41	39	40	40		12			3—6	3—6					12			3-14	3-10½					
" 15,	34	33	38	35		12	93—6		3—1	3—6½					12	69-6		3-12	3-10					
" 16,	42	44	40	41 1 3		12			2-12	2-11					12			3-12	3—9					
" 17,	36	40	40	38 1-3		12			3—9½	2-11					12			3-10	3—6					
" 18,	34	36	38	36		12			2-10	3—4½					12			3—9½	3—7½					
" 19,	30	41	38	36 1-3	42	12	10	23	2—8	2-14					12		16 lbs.	3—7	3—4	7		815		
" 20,					1-7°			6 1-7									12 1-7			6 11-14				
						160	348—6		46-15	46-13	10 3-7		1010	45 lbs.	160	234-10	oz.	54—5	50—9					
							L. Hay.									*C hay.*								
Feb. 20,	28	36	35	33		12	25—8		2-12	2-11½		1010			12	23-8		3—6½	3—2½		815			
" 21,	26	36	38	33 1-3		12	66-14		2-11	2—7					12			3—6½	3—3					
" 22,	40	42	46	42 2-3		12			2—7	2-14					12			3—9½	3—4					
" 23,	38	58	55	50 1-3		12	75—8		2—8	2-11½					12			3—4	3—5½					
" 24,	50	45	48	47 2 3		12			2—3	2—4½					12	72		3—2½	3—2½					
" 25,	52	52	57	53 2-3		12			2—3	3					12			3—3	3					
" 26,	40	45	41	42		12	55-10		1—7½	2-12					12	59-8		3—1½	2-13					
" 27,	38	43	41	40 2-3		12			2—2	2—2					12			3—1	2-14½					
" 28,	40	38	41	39 2-3		12	61—2		2—1½	2—1					12			2-14	2-13					
" 29,	38	41	38	39		12			1-15½	2—2					12			2-15	2—8½					
Mar. 1,	36	42	41	39 2-3		12			1-12	1-13½					12			2-14	2-12					
" 2,	38	38	38	38		12	62-14		2—1	1-10½					12	39-10		2-12	2-11					
" 3,	34	41	40	37		12			1-11	1-12½					12			2-11	2-12					
" 4,	39	41	40	37	41°	12			2—0½	1-11½					12			2-12	2-13					
" 5,								24			4lbs.		1030	20 lbs.			13			6				
						168	347—8	13 1-7	23-14½	32—1½	6 6-7				168	194-10	14 3-7	43-0½	40-10½	1 5-14		859	35	

It is necessary, in order to comply with the rule adopted for the trial, to add a few particulars. The trial was made with two cows. One, Beauty, calved on the 14th day of June last, and is expected to come in on the last day of June, having been served the 30th day of September last. She is one-fourth Ayrshire, was raised by myself, and will be four years old the 13th day of May next. The other, Cherry, calved on the 20th of June last, and is expected to come in on the 14th day of May next, having been served on the 4th day of August last. She was purchased by me, is said to have some Devon blood in her, and is also four years old this spring. At the commencement of the trial both animals appeared to be in good health, but before the first period of trial had passed, Cherry showed symptoms of disease. Her disease was the "horn ail." I think a check was put to the disease and she began to mend before the third period had expired, though she had not entirely recovered till after the last fortnight of trial had commenced, or perhaps till its expiration. Her sickness was severe during the first part of its continuance. Probably her health was quite as good during the last fortnight, if indeed it was not better than at any other period of the trial.

In conducting this experiment, my general management in the stable has not been varied in the least particular, save so far as the preparation of the fodder by cutting was concerned. I have no doubt a greater gain may be obtained by forcing; but my aim has been so to conduct this experiment that others might be satisfied what results would attend similar management with their own stock.

The table shows the amount of food (hay and roots) fed to each animal. Each of these cows has fared just like all the rest of my stock, save that their hay on alternate fortnights has been cut, and the amount of roots fed to them daily has been determined by scales instead of measure.

Perhaps I should add that the milking is at regular hours, at 6 A. M. and 6 P. M.; that each morning each animal is curried clean, turned out to drink, and allowed to return to the barn as soon as she pleases; that the barn is shut up till noon, then the same course of watering is pursued, the barn shut up again; and so at night. At this time the cattle are kept out till they can be bedded down, when they are turned in, fed,

milked, and the barn shut up for the night. The amount of food consumed is put before the cattle at three meals.

Inasmuch as I have taken the sole care of my stock, I can say with confidence that the weights of fodder and milk are correct. The certificates of the weights accompanying this, are vouchers for the gain or loss in live weight of the animals at the respective times of weighing.

The committee will excuse an intrusion of my opinion upon the advantage of cutting hay before feeding to stock, and in what I say I have no reference to the experiment I have detailed. My milking stock consisted of one cow which came in the 29th of last October, the two trial cows, and one other which calved last April, and is expected to calve again the first of next April. Sometime before commencing this experiment, I was feeding to my stock what would be called poor stock hay with an allowance of roots. I commenced cutting this hay for all my stock, young and old, (16 head,) occupying me about $1\frac{1}{2}$ hours daily. Almost simultaneous with feeding the cut hay was an increase of milk, very perceptible as it was milked in the pail. An inquiry was made by my wife, who in person takes sole charge of the dairy, as to the cause of this increase. An evasive reply was made. From day to day the milk increased enough from the stock I have described, to require the substitution of six quart for four quart pans, which had been previously used. I think I am within bounds in saying the increase was over a pint daily per cow, occasioned, to the best of my knowledge, solely by the use of cut hay. As to the general condition of my stock, the committee, should they desire to look at it, can judge.

Whether, in your judgment, this may be the most or the least successful of the experiments in determining this vexed question, is of little consequence. I hope it may be of such character as to induce to other more general and longer extended trials.

I should have added that the hay used was English, what is called "old field," that it was universally fed dry, that the times of feeding were regular throughout the entire period, being 6 A. M., 1 and 6 P. M., and that the animals were weighed at each time early in the morning, say from 7 to half past 8, and always before being allowed to drink.

March 12, 1852.

Letter from Hon. John W. Lincoln.

Gentlemen,—You will doubtless recollect that at the meeting of the Trustees of the Worcester Agricultural Society, at which it was agreed to offer premiums for the purpose of ascertaining by experiments, the advantages or disadvantages of feeding farm stock with cut or uncut hay, I stated that personally I should not be a competitor; that I had an opinion, which I had been unable to find evidence to confirm or disprove, and which I was desirous, as I deemed the subject of much importance to the farmer, to have tested by experiment; that I considered it desirable to excite as much competition for the premiums as was practicable; that to insure an additional trial I was disposed to say to Mr. Hawes, who has, for about twelve years, had the immediate supervision of my farm, that he might make the experiment with any of my cattle, and should be entitled to the premium if the committee should think that the result of the experiment made by him would justify such an award, provided the Board should be of the opinion that there was no impropriety in my so doing: Mr. Hawes to be considered as standing in the same condition as those competitors who should make the experiment with their own cattle and food. The Trustees expressed their approbation of this arrangement as being favorable to the society, thereby increasing the competition. I accordingly made the proposition to Mr. Hawes, who assented to it with the express understanding, that I should have no pecuniary interest in the question of premium, and should have nothing to do with the experiment, except to aid in drawing the report from such facts as he should furnish me, if he should desire it. Of my position the Board were reminded at their meeting, when I was placed on this committee.

Mr. Hawes made out a written statement of the weighing of the cattle at the different times, and of the hay, cut and uncut, which they had eaten during the different periods, addressed to me, stating to me verbally several circumstances which were not embodied in his report; believing that it was important that all the facts in the case should be made known to the committee, it became necessary that it should be rewritten, which has been done and is now communicated to you.

As my connection with Mr. Hawes, as it has been of many years continuance, is generally known to the public, my position in relation to this experiment would not be understood without an explanation, which should define my position in reference to this business, except to those who, like yourselves, have been acquainted with all the facts in the case, which seemed to render this statement necessary, and it is now submitted to your disposal.

Amherst H. Hawes's Statement.

Hon. John W. Lincoln: Sir,—As requested by you, I have made a trial of feeding with cut and uncut hay, with your speckled yoke of oxen, in terms of one fortnight each. When one was fed with cut hay, the other had uncut hay, and so changing at the expiration of each two weeks, except at the close, when the trial was prolonged. The trial was commenced on Monday, the 15th day of December last, at which time the near ox weighed 1,520 lbs., the off ox, 1,500 lbs., on the hay scales of Henry S. Washburn, Esq., in the Quinsigamond Village. Each ox was fed with the same quantity of hay, of the same quality, 35 lbs. of uncut hay being eaten each day, to the 29th December, by the near ox, and 35 lbs. of cut hay by the off ox. On the 29th December the cattle were again weighed on the same scales, and the near ox was said to weigh 1,504 lbs., and the off ox 1,487 lbs.; by this, it would appear that the near ox had lost in weight 16 lbs., on uncut hay, and the off ox 13 lbs. on cut hay. Between the 15th and 29th of December, these cattle were worked ten days in drawing heavy loads of green oak wood from the farm into the village, some of them exceeding 11 feet in measure, principally to the houses of Hon. L. Lincoln and W. S. Lincoln, Esq., they being one yoke of a team of two pairs of cattle. It should be stated, that I then believed that there must have been an error in the last weighing, as above stated; I was of the opinion that the cattle had both gained in weight during the fortnight, instead of having lost any of their flesh; such was also the opinion of others, who saw them, and that opinion seems to be confirmed by subsequent results. The weight, as given by the hay scales, on the 29th December, was, for the

near ox, 1,504 lbs., for the off ox, 1,487 lbs.; they each of them had 38 lbs. of hay per day, the near ox having cut hay, the off ox uncut hay. On the 12th of January last they were weighed on the hay scales of William B. Fox, Esq., the scales of H. S. Washburn, Esq. having been rendered useless by an accumulation of ice; the scales of W. B. Fox, Esq., were used during the remainder of the trial. The weight this day, as given by the scales, was, for the near ox, 1,594 lbs., for the off ox, 1,556 lbs.; each ox during the preceding two weeks had eaten 38 lbs. of hay per day, and if there was no mistake in the last weighing on Mr. Washburn's scales, the near ox had gained 90 lbs. on cut hay, the off ox, 69 lbs. on uncut hay; during this period the oxen had worked ten days in drawing logs to mill, and wood into the central village.

From the 12th to the 26th January, the cattle were fed with 38 lbs. of hay each, except on the 16th, 17th, and 18th days, on which they eat 40 lbs. each; on those days they performed no labor, and were in the barn the greater part of the day. The weight of the near ox was 1,616 lbs.; of the off ox 1,586 lbs., from which it appears that the near ox had gained 22 lbs. on uncut hay, and the off ox 30 lbs. on cut hay—during this time the cattle worked ten days in drawing wood to railroad.

From the 26th of January to February 9, each of the oxen eat 39 lbs. hay per day, and at the last mentioned time the near ox weighed 1,646 lbs., and the off ox 1,604 lbs., from which it appears the near ox gained 30 lbs. on cut hay, and the off ox 18 lbs. on uncut hay—during this time the cattle worked ten days in drawing logs to mill.

From the 9th to the 16th of February, the cattle were worked six days in drawing wood and rocks, and each eat 39 lbs. hay per day; on the last mentioned day the scales gave to each ox the same weight as on the same day a week before, the near ox having uncut hay, the off ox cut hay.

From February 16th to 23d, one week, the cattle, each of them eat 39 lbs. hay each day, and were worked six days in drawing wood, rocks, &c., and on the 23d February the near ox weighed 1,648 lbs., and the off ox 1,602 lbs., by which it appears the near ox gained two lbs. on cut feed, and the off ox lost two lbs. on uncut hay. From February 23d to March 1st, one week, the cattle were worked six days in drawing rocks,

wood and logs; at the expiration of the term the near ox weighed 1,628 lbs. and the off ox 1,617; the near ox having lost 20 lbs. on uncut hay, the off ox gaining 15 on cut hay. As time would not allow the continuance of the experiment, and allow time to make out a report, it was here closed. It will be seen that during the whole time the near ox has gained 108 lbs., the off ox 117 lbs., making 225 lbs.; the near ox has gained on cut feed 122 lbs., the off ox has gained on cut feed 45 lbs., and lost 13 lbs.; net gain 32 lbs., making 154 lbs. gain on cut feed; the near ox has gained on uncut hay 22 lbs., and lost 36 lbs., net loss 14 lbs.; the off ox has gained on uncut hay 87 lbs., and lost 2 lbs., net gain 85 lbs.; gain on uncut hay for the pair, 71 lbs.; greater gain on cut hay than uncut, 83 lbs., provided there was no mistake in the second weight of the cattle. If no account is taken of the first four weeks, the net gain in favor of cutting hay is 59 lbs.

A great advantage in cutting hay, at least for working stock, was very obvious during the whole of this experiment; before the ox feeding on uncut hay had gotten one-half through with his allowance, the ox which had cut feed, had eaten up what was given him, and was lying down taking his rest, and this, at noon, when but little time is allowed for eating and rest, must be an advantage of no small importance.

The labor of the cattle for the last six weeks, and particularly of the last week, was quite severe; the loads were usually heavy, and in consequence of considerable bare ground, the draught was in many cases very hard.

The state of the atmosphere it was not possible to take account of, as the cattle were employed at labor in the open air, without anything to protect them from its severity, (probably suffering more when standing for the loads to be put on than when in exercise,) and would not immediately recover from the effects of their exposure, upon being returned to the barn. The barn where they were kept is warm; at no time during the winter has the manure where the cattle stood been in any manner stiffened by the action of the frost. The temperature in the barn must have been nearer 40 than 30 degrees; but little regard was paid to the warmth of the barn, the cattle being absent so large a portion of the time. It may be proper here to state that it has been deemed expedient to keep open,

through all the hours of the day, the upper half of a small door for the benefit of air and ventilation, in addition to some small windows. The average number of hours that the cattle have worked per day, has been six, but during the latter part of the term their hours were occasionally extended to nine. During the whole trial the oxen had nothing given them to eat except hay as stated, and their only food from the 15th December to March 1st, both inclusive, was hay and water.

Had I exercised my own discretion in this matter, I should have selected two animals for the trial who would have had nothing to do, but *to eat and grow fat*, as more likely to furnish a result which would have appeared far better on paper, and then should have been able to have complied with all the requirements of the society. You will recollect that you suggested to me to make the trial with the working oxen, saying that you wished the trial should be made under all the circumstances common to a farmer's stock; that it was perhaps more important as applied to working stock than any other; that you doubted whether any other person would make a trial with oxen actually at work at the time, and expressed a wish that I would do it. I yielded to your wishes, and at your request have made the trial, the particulars of which have been stated, to be disposed of in such manner as the committee shall judge proper.

These cattle were bred in Vermont, were purchased for you when they were about three and a half years old, and about these days are supposed to be coming six years old.

It should have previously been stated that the hay as given to the cattle was all of it in a dry state.

I append hereto the state of the weather, as taken from the tables kept by Dr. George Chandler, at the State Lunatic Hospital, in Worcester.

State of the Weather during the experiment of Mr. Hawes, according to the Meteorological Table kept at the State Lunatic Hospital, at Worcester.

Date.	Hours of Day.			Date.	Hours of Day.			Date.	Hours of Day.			Date.	Hours of Day.		
	6 A. M.	2 P. M.	10 P. M.		6 A. M.	2 P. M.	10 P. M.		6 A. M.	2 P. M.	10 P. M.		6 A. M.	2 P. M.	10 P. M.
1851.				1852.				1852.				1852.			
Dec. 15,	16	23	22	January 5,	33	36	38.5	Jan. 28,	18	33	33.5	Feb. 20,	3	17.5	5
16,	20	17	6	6,	30.5	29	29.5	29,	34.5	41.5	34.5	21,	2	26.6	24
17,	1	10	3	7,	25.5	22	13	30,	29	33	29	22,	22	34	32
18,	2	13	10	8,	11	24.5	10	31,	22	19	16	23,	34	42.6	36
19,	12	2.4	14	9,	12.5	23.5	26.5	Feb. 1,	17	23	21	24,	30	44.5	37
20,	22	30	21	10,	27.5	35	28	2,	20	26.5	21.5	25,	39	48.5	37
21,	10	23	14	11,	27	28.5	25	3,	18	28	17	26,	23	33	23
22,	11	21	17.5	12,	23	25	18	4,	22	37	32	27,	16	27.5	25
23,	16.5	21	13	13,	14.5	21	14	5,	27.5	43	37	28,	24	27.5	32
24,	10	22	22	14,	8	21	21	6,	33.5	44	36	29,	23	26	17
25,	28	19	7	15,	24	34	25	7,	36	39	32.5	March 1,	18	24	21.5
26,	2	10	4	16,	2	12	10	8,	25	29	32.5	2,	19	18	13
27,	0	15	14	17,	12	15.5	10	9,	20	37.5	32	3,	5	18	16
28,	20	44	45	18,	10	8	3	10,	28	46	39.5	4,	8	27	23
29,	41	47	40	19,	25	4	0	11,	43	50	43.5	5,	22	33	32
30,	30	47.5	43.5	20,	2	7	0.5	12,	35	35	22				
31,	42	45.5	39	21,	10	20	13	13,	17	28	23				
				22,	8	15	7	14,	20	23	18				
1852.				23,	5	17	14	15,	8.5	25	21				
January 1,	38	41	32	24,	9.5	25	23	16,	28	30	18				
2,	24.5	31	23	25,	19	40	30.5	17,	12	21.5	13.5				
3,	19	23.5	24	26,	33	40.5	26.5	18,	11	21	8.5				
4,	25.5	28	28.5	27,	13.5	25.5	18	19,	4.5	18	7				

Letter from Hon. John Brooks.

Gentlemen,—Herewith you have an account of some trials in feeding which I have made within the last three months, with a view to determine the relative value of different kinds of food for producing milk, and the proportion of solid manure to the hay consumed. I have purposely delayed this communication beyond the time named in the society's rules for having all applications for premium on feeding filed with the secretary, (the 15th of March,) because I do not propose for a premium, but wish only to add whatever I may to the interest of this important subject. You then, gentlemen, will not consider me as competing with gentlemen proposing for premium, but will dispose of this communication in any way you may deem proper.

December 17, 1851, commenced feeding two cows about seven months after calving; the cows were gravid and expected to calve about the last of March next; live weight 1,600 lbs.; one of them forty-four the other thirty-one months old. Each trial continued five days. First five days fed on 2 per cent. of live weight,—

Of cut hay, daily, ...	32 lbs.
2 lbs. of Indian meal, hay value, ...	8 "
Hay value of daily food, ...	40 "
Hay value of five days' food, ...	200 "
Cost of five days' food, hay at $\frac{1}{2}$c. per lb., . .	$1 00
Milk in five days, ...	61.875 "

Cost of milk, hay at $\frac{1}{2}$c. per lb., 1.616 cent the pound, or 3.232 cents the wine quart.

Second Trial,—Fed five days on $2\frac{1}{2}$ per cent. of live weight of cut hay—

Cut hay, daily, ...	40 lbs.
Cut hay in five days, ...	200 "
Cost of five days' food, hay at $\frac{1}{2}$c. per lb., . .	$1 00
Milk in five days, ...	60 "

Cost of milk, hay at $\frac{1}{2}$c. per lb., 1.666 cent the lb., or 3.332 cents the wine quart.

These trials show that 2 lbs. of Indian meal, are very nearly

equal to half per cent. of live weight of hay, or that one pound of meal is equal, nearly, to 4 lbs. of good English hay.

Third Trial,—Fed five days on cut hay,		16 lbs.
32 lbs. oat straw, hay value,		16 "
2 lbs. Indian meal, hay value,		8 "
Hay value of food, daily,		40 "
Hay value of five days' food,		200 "
Cost of five days' food, hay at $\frac{1}{2}$c. per lb.,	$1 00	
Deduct 5 lbs. hay and straw, not consumed,		$2\frac{1}{2}$
Milk in 5 days, 50 lbs.,		$97\frac{1}{2}$

Cost of milk, hay at half a cent a pound, 1.95 cent the lb., or 3.90 cents the wine quart. The hay and straw cut, and given wet; the meal sifted over the hay and straw. This trial seems to show that 2 lbs. of oat straw is not equal for milk to 1 lb. of hay.

Fourth Trial,—Fed five days on cut hay daily,		16 lbs.
Oat straw cut, 32 lbs., hay value,		16 "
2 lbs. Indian meal, hay value,		8 "
Hay value of five days' food,	200	
Deduct six pounds, not consumed,	6	
		—194 "
Cost of five days' food, hay at $\frac{1}{2}$c. per lb.,		97c.

Milk in five days, $48\frac{6}{16}$ lbs.

Cost of milk, hay at $\frac{1}{2}$c. per lb., 1.995 cent per lb., or 3.99 cents the wine quart. The hay straw and meal were given dry, and the trial shows that dry hay, straw, and meal, is not so good for milk as when wet.

February 3, 1852, commenced feeding two cows, one thirty-three months old, fourteen days after calving; live weight, 1,000 lbs.; the other thirty-one months old, seven months after calving, not now in calf; live weight, 690 lbs. These cows were fed five days on 42 lbs., or $2\frac{1}{2}$ per cent. of their live weight of uncut hay, and 50 lbs. of flat turnips daily.

Uncut hay, daily,		42 lbs.
Turnips, 50 lbs., hay value,		10 "
Hay value of five days' food,		260 "
Cost of five days' food, hay at $\frac{1}{2}$c. per lb.,	$1 30	

Milk in five days, 153.625 lbs.

Cost of milk, hay at ½c. the lb., .846 of a cent the lb., or 1.692 cent the wine quart.

Second Trial,—Fed five days on cut hay.

Cut hay daily,		42 lbs.
Turnips, 50 lbs., hay value,		10 "
Hay value of five days' food,	260	
Deduct five lbs. not consumed,	5	
		255 "

Cost of five days' food, hay at ½ cent per lb., $1 27½

Milk in five days, 152.25 lbs.

Cost of milk, .837 of a cent per lb., or 1.674 cent the wine qt.

The cows did not eat the cut hay quite so well as the long hay on the first trial, so that on the whole the experiment shows a small difference in favor of cut hay.

Third Trial,—Fed same as second trial, except gave three lbs. Indian meal instead of 50 lbs. turnips.

Cut hay daily,		42 lbs.
3 lbs. Indian meal daily, hay value,		12 "
Hay value five days' food,	270	
Deduct 10 lbs. hay not consumed,	10	
		260 "

Cost of five days' food, hay at ½ cent per lb., $1 30

Milk in five days, 153 lbs.

Cost of milk, hay at ½ cent per lb., .849 of a cent per lb., or 1.698 cent the wine quart. This trial seems to prove, that 3 lbs. Indian meal is equal to 12 lbs. English hay, or 50 lbs. flat turnips, for milk.

Fourth Trial, fed cut hay daily,		42 lbs.
33 lbs. carrots daily, hay value,		11 "
Hay value five days' food,	265	
Deduct five lbs. hay, not consumed,	5	
		260 "

Cost of five days' food, hay at ½ cent per pound, $1 30

Milk in five days, 150.5 lbs.

Cost of milk, hay at ½ cent per lb., .863 of a cent per lb., or 1.726 cent the wine quart. This trial shows that 33 lbs. of carrots are not quite equal for milk, to 50 lbs. of flat turnips,

or 3 lbs. of Indian meal. The cows in all the trials had free access to water.

December 10, 1851, commenced feeding one cow 72 months old, one do. 96 months old, one do. 48 months old, five heifers 32 months old, seven heifers 22 months old, four calves 9 months old, four calves 8 months old. These cattle weighed, live weight, 14,567 lbs.; were fed five days on 277 lbs. of cut hay daily, and drank daily, 887 lbs. of water; dropped daily, 668 lbs. of solid manure, or 2.41 lbs. of manure for one lb. of hay consumed.

Second trial commenced December 16, 1851. Fed same cattle five days on 352 lbs. hay daily; solid manure dropped daily, 860 lbs., or 2.44 lbs. for one lb. of hay consumed; drank daily, 868 lbs. water.

February 28, commenced feeding one cow, 72 months old, one do. 96 months old, and one, 48 months old, three heifers, 32 months old, and six heifers, 22 months old. The live weight of these cattle was 9,472 lbs.; these cattle were fed five days 240 lbs. cut hay daily; solid manure dropped daily, 594 lbs., or 2.47 lbs. manure for one pound of hay consumed. Drank daily, 542 lbs. water.

Hay consumed in the three trials, . . . 869 lbs.
Manure dropped " " " . . . 2,122 "

The proportion of manure to hay, is as 2.44 lbs. of manure to one pound of hay; the manure weighed 50 lbs. the cubic foot.

Manure, after remaining under my barn one year, weighed 44 lbs. the cubic foot; a loss of 6 lbs. in one year, or 12 per cent. of its weight when recently dropped.

Princeton, March 22, 1852.

It has been thought expedient to connect with the foregoing report, the following letter from Hon. John W. Lincoln, President of the society. Although it was originally written for the columns of the New England Farmer, its paternity is justification for its insertion in the Transactions of the Society over which he presides. The facts it details would seem to settle vague surmises and conjectures which have been circu-

lated in reference to the value of carrots as food for milch cows, and prove also the high place this crop should hold in the mind of every good farmer, as food for his swine and stock generally.

Letter from Hon. John W. Lincoln.

COWS AND CARROTS.

Gentlemen,—I experienced no little surprise and regret occasioned by the perusal of a communication addressed to you, written by J. G. Hoyt, under the above head, and published in the February number of the New England Farmer, in which he states the opinion of a large milk farmer of Bradford, "that carrots do not contribute in the slightest degree to increase the amount of milk in a cow." That his informant maintains, "that while the quality of milk may be improved by carrots, the quantity is not perceptibly affected." He thinks "that carrots, when fed out in ordinary doses, do not diminish in the least the quantity of hay necessary for his cows; but that they serve merely as condiments." That "he is decidedly of the opinion, that $3 is quite as much as a man can afford to pay for carrots to tickle the palate of a pet cow." You may judge, sirs, how much I differ in opinion from the Bradford farmer, when I inform you, that for several years past, in addition to the quantity I have raised on my own land, I have purchased the surplus carrots of my neighbors, amounting to several tons each year, and paid for them $9 per ton, delivered at my barn, and did then, and now do believe, that I paid no more than their value, not to tickle the palate of a pet cow, but to feed out to my stock. I was disposed to inquire whether it was possible I should be so greatly mistaken in my estimate of the intrinsic value of carrots. I was aware that in the table of Rham, of the relative value of different vegetable substances as compared with good hay, carrots were not placed so high as by me; so also in the table of Boussingault, which has the approbation of Professor Johnston, in his Agricultural Chemistry, but this was in the production of muscle. I knew that the books were full of commendations of the culture of carrots for stock generally, but particularly for horses, without one word of discouragement, so far as I have knowledge. I had

full evidence that carrots were good food for swine. For several years past, I have kept my swine principally on carrots through the winter months; they have been boiled, a small quantity of cob and corn meal added, and with the slops of the house, have been the only food of my swine; deprive them of the carrots, and the remainder of their food would have been insufficient to sustain life. My winter stock of swine has usually consisted of breeding sows, and they have uniformly been in such condition, that I was entirely willing that my piggery should be visited by any one disposed to inspect it, or its tenants. The usual observation has been, that "those swine are too fat, to do well in having pigs." I formerly kept my swine on potatoes, as I now do on carrots, and they have never done better than of late years.

That carrots contain much nutriment, I cannot have a doubt; sufficient, as I apprehend, to induce farmers to grow them in considerable quantities for the benefit of their stock: that "when fed out in ordinary doses" they may so far improve the health of the animal, as to enable it more completely to digest their hay, by which to add to the covering of the ribs and the secretions of the milk vessels. That either your Bradford friend or myself was greatly in an error was most manifest. After carefully recalling to recollection what I had been able to obtain from books on this subject, my own experience, and that of others so far as it had come within my own observation, without discovering the fallacy of my former views, I was induced to inquire whether the opinions of the Bradford farmer were correct, although expressed with much confidence, and partially confirmed by the approval of two of the editors of your valuable publication, in whose agricultural knowledge the public have placed so much reliance, that it seems much like presumption to express a doubt. I was desirous of further evidence. I read the communication to Mr. Hawes, who has the immediate supervision of my farm, and requested him to take two cows then giving milk, as much alike as he could find them, ascertain what quantity of hay they were then eating, continue to them the same quantity of hay, but add to one of them a peck of carrots per day; and after a trial of a week to change the carrots to the other cow, watch the effect carefully, and to report to me the result. He

informs me that the milk of the cow eating carrots was increased one quart, or more each day—on no day less than a quart, and on some days a little more; that the cow having hay alone, constantly eat up her whole allowance, and the one having carrots uniformly failed to do so, and this was the case with both cows while having the carrots; that each cow, when deprived of the carrots, at the close of each trial, fell off in her milk below the quantity given at the commencement, occasioned, probably, by their becoming dry preparatory to having their next calf, which is expected with both, about the first days of June next.

Having thus obtained the testimony of two witnesses, (that the use of carrots will not only tickle the palate of a pet cow, but if administered in ordinary doses will increase the quantity of milk, and diminish the quantity of hay necessary for food,) whose competency to testify on this subject, will not be questioned, I will here rest the case, repeating, that I have much regretted the publication, in the apprehension, that it might have the tendency of deterring many from growing root crops for the winter food of their stock.

This difference of opinion furnishes evidence of the importance to the farmers of Massachusetts of having a school and farm, where all similar practical questions can be settled under the direction of a Board of Agriculture, to be established, as it is hoped, by the present Legislature.

J. W. L.

Worcester, Feb. 17, 1852.

WORCESTER WEST AGRICULTURAL SOCIETY.

This society held its annual exhibition Sept. 30th, 1852. The exercises of the occasion commenced with the examination of horses, mares, and colts, of which there was a fine collection of choice animals, mostly of the celebrated stock known as the Morgan and Black Hawk races. High encomiums were passed, by all observers, upon this feature of our exhibition—represented by so many fine specimens of their kind—for which this section of our county is justly celebrated.

The ploughing match, and trial of working oxen, came next in order; and from the numbers, skilful training, and fine condition of the animals, together with the earnest competition of the owners and drivers for the premiums, constituted a very important feature of the day.

The several committees, in the order of their appointments, next proceeded to their separate duties of examination of stock, of which there was a large and choice collection, as fat cattle, milch cows, heifers, bulls, steers, and calves.

The number of swine was large, and of superior breeds and condition.

Several superior specimens of sheep, of various breeds, as the South Down, Smyrna, Leicestershire, and native, were exhibited, indicating an increasing interest of our farmers in this valuable animal of farm stock.

The poultry exhibited, though not large in numbers, was of superior quality, and choice and approved varieties.

The exhibition of roots, grain crops, butter, and cheese, was of superior quality, and in fine condition.

The display of fruits exceeded the high-raised expectations of all observers of this portion of our exhibition, celebrated as it has heretofore been for numerous and choice varieties, and

the apparent skilful attention to the growth and health of the *trees*, as well as the perfection of their fruits.

The arrangement and display of manufactured articles of delicate fabric, presented by the ladies, together with the implements of agriculture and various manufactured articles, contributed essentially to promote the enjoyment and foster the sentiments of social and virtuous emulation, so generally attendant on the farmers' jubilee.

The society was addressed in a very able manner by Hon. Amasa Walker, after which an interesting address from Francis Brewer, Esq., delegate to the society from the State Board of Agriculture, when the society listened to the reports of the several committees, and adjourned, to celebrate another pleasant and profitable anniversary.

Respectfully submitted,

WM. PARKHURST, *President.*

JOSEPH N. BATES, *Secretary.*

Horses, Mares, and Colts.

The committee on horses, mares, and colts, have awarded the first premium, of $10, to Col. H. A. Longley, of Belchertown, for his stallion, bay Kentucky Hunter. The committee are of the opinion that said horse is one of great merit, and is fast becoming too well known in our community to require any recommendation from the committee.

The second premium, of $6, was awarded to Francis Twichell, Jr., of Petersham, for his superior black stallion, a Morgan horse, six years old.

Mr. Orin Trow, of Hardwick, presented for exhibition before the committee, his very fine bay horse, with several superior specimens of his stock, which were highly creditable to a sire well known in the vicinity for his excellence.

There was a large and spirited exhibition of gelding horses, and attended with a close competition for superiority of claims, combining all the qualities of a superior horse, which existed in each in a superior and rather high degree, yet with great disparity.

The first premium, of $4, was awarded to Clark Jamerson, of Hardwick, for his gray horse, four years old. In awarding this premium the committee regret that they had not more premiums to award, as the horses of Messrs. David Bacon, of Barre, and W. A. Warner, of Hardwick, possessed merits, although various, yet very equally balanced.

The committee award the premium of $3 to Moses Ruggles, of Hardwick, for his superior three years old mare.

Artemas Lee, *Chairman.*

Mares and Colts.

The committee on mares and colts have been called to the examination of a display of mares and colts of superior quality, some of which have many points of decided excellence. Of those presented for competition, the committee award the first premium, of $6, to Harrison Bacon, of Barre, for the best breeding mare,—his bay mare, eight years old,—English descent, weighing 1,235 lbs.

The second premium, of $4, for the next best, to Harrison Bacon, of Barre, for his gray mare, six years old, Morgan descent.

For the best three years old colt, to Mr. A. Putnam, of Holden, for his sorrel colt, sired by Abbott horse, the premium of $3.

For the best two years old colt, to Dr. James Stone, of Phillipston, for his bay colt, sired by Green-Mountain Morgan, $2.

For the best yearling colt, to Harrison Bacon, of Barre, for his Black Hawk,—sired by Black Hawk, of Bridport, Vt.,—from his bay mare, $2.

For the best sucking colt, to Mr. James H. Ban, of New Braintree, for his bay colt, sired by Trow horse, $2.

The committee would only add their testimony to the judgment of the entire body of spectators, that the display of animals was unusually fine, and would seem to demonstrate that by close attention to the qualities of the parents, this section of our county may become as distingushed for the successful rearing of horses, as for the other departments of agriculture.

Edwin Woods, *Chairman.*

Ploughing.

The committee appointed to report on the ploughing match, having attended to that duty, submit the following report:—

There were in all ten entries. The committee award to—

George Harwood, of Barre, the	1st	premium, of	. .	$8
Nathan S. Walker, "	2d	"	. .	7
William Robinson, Jr., "	3d	"	. .	6
Eri Parlin, of Petersham, the	4th	"	. .	5
Perry Carruth, "	5th	"	. .	4
George H. Lee, of Barre, the	6th	"	. .	3
James H. Carruth, "	7th	"	. .	2
William Eames, of Worcester,	8th	"	. .	1

The plough of John Smith would have been entitled to premium had he been the owner of the plough the length of time specified in the regulations of the society.

Nathaniel Holland, *Chairman.*

Working Oxen.

The committee on working oxen have attended to that duty, and submit the following report:—

There were entered for premium seven pairs of working oxen. Your committee, after trial, have awarded premiums to individuals as follows:

Nathan S. Walker, of Barre, the	1st	premium, of	. .	$8
Francis Twichell, Jr., of Petersham, the	2d	premium, of	.	7
Wilcut Harwood, Jr., of Barre, the	3d	premium, of	.	6
John Smith, "	4th	"	. .	5
George Harwood, "	5th	"	. .	4
Caleb Harwood, "	6th	"	. .	3
Warner Smith, "	7th	"	. .	2

To Nathan S. Walker, of Barre, the society's premium of $2, for the consideration of his being the most skilful and competent *driver*.

Anson T. Allen,
Jonas H. Howe,
Silas O. Harding,
James Whitney,
Wilcut Harwood,
Committee on Working Oxen and Drivers.

Bulls.

The committee on bulls, two years old and upward, respectfully make the following report:—

Eight fine animals were examined, weighing in the aggregate 13,250 lbs.

The committee unanimously, after a careful examination, award the premiums as follows:

To Calvin Sanford, of Barre, for his full blood Durham bull, weighing 2,100 lbs., seven years old, the first premium, of $7.

To Samuel Ellsworth, of Barre, for his full blood Durham bull, four years old, weighing 1,675 lbs., the second premium, of $5.

To Mr. Nathan S. Walker, of Barre, for his full blood Durham bull, four years old, weighing 1,420 lbs., the third premium, of $4.

To Nelson Loring, of Barre, for his quarter Durham three-quarter native bull, weighing 1,210 lbs, the fourth premium, of $2.

By order of the committee,

John Raymond, *Chairman.*

The committee on bulls, under two years of age, having attended to the duty assigned them, respectfully report:—

That of bulls of the second class, they regret to say they found but two animals to compete for the premium offered, and those, in the opinion of the committee, were not so promising as they could have desired to see.

The committee award the first premium, of $5, to Reed S. Ruggles, of Hardwick, for his bull, one year old, half Durham half Hereford.

To John Corbin, of Barre, the second premium, of $4, for his bull, sixteen months old, seven-eighths Durham.

In passing to the third class, the expectations of the committee were more fully realized. They found in the pens eight animals of the description that come within their jurisdiction, and a finer company of youngsters could hardly be found in one assembly for show and competition for the prizes. The committee, on examining the several animals, their merits and demerits, found no difficulty in determining which among the good were best, and award the following premiums:—

To Oriston N. Doubleday, of Dana, the first premium, of $5, for his bull calf, six and a half months old, three-quarter Durham one-quarter native.

To Joseph Brown, of Petersham, the second premium, of $4, for his bull calf, seven months old, half Devon three-eighths Durham one-eighth native.

The committee, in awarding the above premiums, have the pleasure of saying, that there were other animals in the company that came within their notice, and worthy associates of their more fortunate competitors, and had they the means at their disposal, would gladly have extended more substantial favors to their owners than mere commendations; but they can only say to such, "Be not weary in well doing."

The committee, in closing their report, beg leave to suggest that there has been, in their opinion, a mistaken policy among breeders of cattle in putting their bulls to service too young. It is said, by many, that calves are better from a yearling bull than from an older one, hence the older ones are thrust aside, notwithstanding their many good points and qualities, to give place to younger ones, which in their turn must give way to others. When, if the bulls were kept from service till two or three years of age, as is believed to be the practice of breeders in foreign countries, their stock would continue good, and we should not witness the deterioration in the progeny of bulls, that is so frequently complained of. It is believed that this is an evil that ought to be considered by all who raise stock and

have animals of promise, and a practice pursued that shall remedy the evil.

All of which is respectfully submitted,

HOLLIS TIDD, *Chairman.*

DAIRY COWS.

The committee upon dairy cows would respectfully report:—

That for the best dairy of cows, not less than six in number, they award the first premium, of $10, to Samuel Ellsworth, of Barre. The precise requisitions of the society were not complied with in this case in *one* respect. But your committee were of unanimous opinion that these cows were well worthy of the premium, and as they came in competition with no others, in point of numbers, they had less hesitation in regard to the want of compliance with a single printed rule of the society. No other *lot* of cows was offered for premium.

For the best single cow they award the premium of $5 to John Bemis, of Barre, for his four years old five-eighths Durham cow.

Also, to John Bemis, the second premium, of $3, for his eight years old one-fourth Durham cow.

The above were the only single cows entered for exhibition—for premiums.

A very fine cow was exhibited by George H. Lee; also, two fine animals by Calvin Sanford.

Respectfully submitted by the committee,

WILLIAM MIXTER, *Chairman.*

Samuel Ellsworth's Statement.

I certify to the following facts, as to the weight of milk daily received from six cows, one of which I exhibit, agreeable with the regulations of the society.

The cow, Georgianna, five years old, one-half Durham, calved the 1st of May; with calf again in March; was dry, during the last winter, six weeks, calf very fine, and sold for veal.

June 10,	yielded	50	lbs.	milk.	Sept.	1,	yielded	29½	lbs.	milk.
" 11,	"	50	"	"	"	2,	"	30¾	"	"
" 12,	"	51	"	"	"	3,	"	30	"	"
" 13,	"	52¼	"	"	"	4,	"	30¼	"	"
" 14,	"	51½	"	"	"	5,	"	34	"	"
" 15,	"	53	"	"	"	6,	"	35½	"	"
" 16,	"	51½	"	"	"	7,	"	36	"	"
" 17,	"	50½	"	"	"	8,	"	36	"	"
" 18,	"	50	"	"	"	9,	"	35	"	"
" 19,	"	51	"	"	"	10,	"	35½	"	"
Aggregate,		511½	"	"	Aggregate,			332¾	"	"

Cow, Barre Star. This cow is eight years old, one-half Durham, calved in April last, with calf again in March; was dry five weeks last season; calf sold for veal; very fine.

June 10,	yielded	40	lbs.	milk.	Sept.	1,	yielded	24	lbs.	milk.
" 11,	"	41	"	"	"	2,	"	26½	"	"
" 12,	"	41½	"	"	"	3,	"	26	"	"
" 13,	"	42	"	"	"	4,	"	26½	"	"
" 14,	"	41½	"	"	"	5,	"	26¾	"	"
" 15,	"	43	"	"	"	6,	"	28	"	"
" 16,	"	42¼	"	"	"	7,	"	29	"	"
" 17,	"	43	"	"	"	8,	"	28½	"	"
" 18,	"	41½	"	"	"	9,	"	29	"	"
" 19,	"	41	"	"	"	10,	"	29½	"	"
Aggregate,		416½	"	"	Aggregate,			273¾	"	"

Cow, Red Rose, eight years old, one-half Holderness, calved in March, with calf again in March; was dry seven weeks; calf raised.

June 10,	yielded	40	lbs.	milk.	Sept.	1,	yielded	25	lbs.	milk.
" 11,	"	41	"	"	"	2,	"	28	"	"
" 12,	"	41½	"	"	"	3,	"	27½	"	"
" 13,	"	42	"	"	"	4,	"	28	"	"
" 14,	"	44	"	"	"	5,	"	30½	"	"
" 15,	"	45	"	"	"	6,	"	29¾	"	"
" 16,	"	39—[in heat,]			"	7,	"	31	"	"
" 17,	"	40	lbs.	milk.	"	8,	"	30	"	"

June 18,	yielded	$42\frac{1}{2}$	lbs.	milk.	Sept. 9,	yielded	29	lbs.	milk.
" 19,	"	$42\frac{3}{4}$	"	"	" 10,	"	$30\frac{1}{2}$	"	"
Aggregate,		$417\frac{3}{4}$	"	"	Aggregate,		$289\frac{1}{4}$	"	"

Cow, Ayrshire, five years old, one-half Ayrshire, calved in April; calves again in April; was dry eight weeks; calf fatted for veal—very fine.

June 10,	yielded	38	lbs.	milk.	Sept. 1,	yielded	20	lbs.	milk.
" 11,	"	39	"	"	" 2,	"	20	"	"
" 12,	"	39	"	"	" 3,	"	21	"	"
" 13,	"	37	"	"	" 4,	"	20	"	"
" 14,	"	40	"	"	" 5,	"	22	"	"
" 15,	"	$41\frac{1}{2}$	"	"	" 6,	"	23	"	"
" 16,	"	38	"	"	" 7,	"	$23\frac{1}{2}$	"	"
" 17,	"	$38\frac{1}{2}$	"	"	" 8,	"	23	"	"
" 18,	"	$38\frac{1}{4}$	"	"	" 9,	"	$23\frac{1}{4}$	"	"
" 19,	"	39	"	"	" 10,	"	$23\frac{1}{2}$	"	"
Aggregate,		$388\frac{1}{4}$	"	"	Aggregate,		$218\frac{1}{4}$	"	"

A native cow, eight years old, calved 1st February; with calf again in February; dry five weeks; calf fattened for veal; very fine.

June 10,	yielded	37	lbs.	milk.	Sept. 1,	yielded	26	lbs.	milk.
" 11,	"	38	"	"	" 2,	"	25	"	"
" 12,	"	39	"	"	" 3,	"	26	"	"
" 13,	"	$37\frac{1}{2}$	"	"	" 4,	"	$25\frac{1}{2}$	"	"
" 14,	"	$38\frac{1}{2}$	"	"	" 5,	"	24	"	"
" 15,	"	$37\frac{1}{4}$	"	"	" 6,	"	$25\frac{3}{4}$	"	"
" 16,	"	$36\frac{1}{2}$	"	"	" 7,	"	27	"	"
" 17,	"	38	"	"	" 8,	"	$26\frac{1}{2}$	"	"
" 18,	"	39	"	"	" 9,	"	25	"	"
" 19,	"	$38\frac{1}{2}$	"	"	" 10,	"	$24\frac{1}{2}$	"	"
Aggregate,		$379\frac{1}{4}$	"	"	Aggregate,		$255\frac{1}{4}$	"	"

Grizzled heifer, five years old. In calf in February; with calf again in February; dry seven months, calf killed for veal.

June	10,	yielded	36	lbs.	milk.	Sept.	1,	yielded	21	lbs. milk.
"	11,	"	38	"	"	"	2,	"	20	" "
"	12,	"	39	"	"	"	3,	"	$21\frac{1}{2}$	" "
"	13,	"	$38\frac{1}{2}$	"	"	"	4,	"	23	" "
"	14,	"	37	"	"	"	5,	"	$23\frac{1}{2}$	" "
"	15,	"	36	"	"	"	6,	"	23	" "
"	16,	"	35	"	"	"	7,	"	24	" "
"	17,	"	$35\frac{1}{2}$	"	"	"	8,	"	25	" "
"	18,	"	38	"	"	"	9,	"	$24\frac{1}{2}$	" "
"	19,	"	$37\frac{1}{2}$	"	"	"	10,	"	25	" "
Aggregate,			$370\frac{1}{2}$	"	"	Aggregate,			$228\frac{1}{2}$	" "

The milk was measured from each cow at different times, and averaged $2\frac{1}{4}$ lbs. to the quart.

One day's butter from six cows, in June, . . $9\frac{3}{4}$ lbs.
" " " " " September, . $8\frac{1}{4}$ "

The cheese from one day's milk of six cows, when dried for market, weighed $23\frac{1}{2}$ lbs.

The cows had extra feed of two quarts corn and barley meal, for a few days, when on trial.

SAMUEL ELLSWORTH.

BARRE, Sept. 29, 1852.

John Bemis's Statement.

My cow, eight years old, one-fourth Durham, was dried 1st of March; calved 1st of April; she made 17 lbs. of butter from the 10th to 20th of June, and gave 45 lbs., or 20 quarts of milk per day; making 450 lbs., or 200 quarts.

She made, from the 1st to the 10th of September, 13 lbs. of butter. She gave 34 lbs., or 15 quarts of milk per day. She calves 20th April.

My cow, four years old, five-eighths Durham, was dried 15th March, and calved 4th of May. She made $20\frac{1}{2}$ lbs. butter, from 10th to 20th June. She gave 44 lbs., or $19\frac{1}{2}$ quarts of milk per day, making 440 lbs., or 195 quarts of milk.

She made, from 1st to 10th of September, 14 lbs. butter. She gave 34 lbs., or 15 quarts of milk per day. She calves 4th of April.

Heifers.

The committee on heifers, have attended to the duty assigned them, and submit the following report:—

The whole number of two years old heifers entered for premiums were four. The committee award

The 1st premium to	Harrison Bacon, of Barre,	. .	$4 00
" 2d "	Wm. H. Bancroft, of Petersham,		3 00
" 3d "	Willard Broad, of Barre,	. .	2 00

The whole number of yearling heifers entered was fourteen.

The 1st premium to	Reed S. Ruggles, of Hardwick,	.	$4 00
" 2d "	Harrison Bacon, of Barre,	. .	3 00
" 3d "	Thomas J. Chamberlain,	. .	2 00

The whole number of heifer calves, seven.

The 1st premium to	Eliphalet Howe, of Barre,	. .	$3 00
" 2d "	Wm. W. Hinkley, "	. .	2 00

Three lots of calves, not less than six in number, one premium to Nathan Hancock, of Barre, ... $5 00

Respectfully submitted, in behalf of the committee,

Jason Goulding, *Chairman.*

Steers and Calves.

The committee on three years old steers, after a careful and impartial examination of all the three years old steers presented for exhibition and premium, (as time and circumstances would permit,) have awarded the several premiums at their disposal as follows:

Your committee examined a very fine pair of one-half Durham steers, owned and bred by Joseph Brown, of Petersham, twin steers, party-colored, and very well matched in all points, weighing 3,620 lbs., docile and well broke. They ran with the cow in milk eight months; fed on roots or meal daily, through the winter, since fed on milk. Stalks and pumpkins

for a few weeks past; and we award him the first premium, of $5.

Also, a pair of steers, owned by Harrison Bacon, of Barre, Durhams, well broke, and of fine form, and matched; in very high order and indicating high keeping, weighing 3,565 lbs., and we award him the second premium of $4.

Also, a fine pair owned by James A. Jackson, of Petersham, one-half Durham, weighing 3,140 lbs., well matched, and broke, fine steers, considering their keeping; one raised on skimmed milk, the other weaned early; no meal or roots, except a few last winter. We award him the third premium, of $3.

A pair of fine steers, owned by John Saunderson, of Bernardston, and kept in Barre, weighing 2,940 lbs., in fair working condition, well matched and broke. We award him the fourth premium of $2.

Mr. Sampson Eames, of Hardwick, and Albert Cleaveland, of Barre, also presented fine animals.

All of which is respectfully submitted,

Joseph Raymond, *Chairman.*

The committee on two years old steers, award the first premium to Daniel Warner, of Hardwick, for his roan steers, weighing 2,750 lbs., $4.

The committee on yearling steers and calves, to Daniel Warner, of Hardwick, for a pair of well matched steers, weighing 1,905 lbs., the first premium, of $3.

To Harrison Bacon, of Barre, for his Durham steers, weighing 1,885 lbs., the second premium, of $2.

To John Raymond, of Hubbardston, for his nicely matched steers, weighing 1,846 lbs., the third premium, of $1.

Calves.—To Samuel M. Stevens, of Petersham, first premium, of $2.

To Warner Smith, of Barre, second premium, of $1.

D. A. Robinson, *Chairman.*

Fat Oxen.

The committee on fat oxen report, that they have awarded the first premium to Harrison Bacon, of Barre, for the best pair of fat oxen, four years old, Durham, weighing, 4,370 lbs., $10.

The second premium to John Saunderson, of Barre, for the next best, weighing 4,988 lbs., $8.

The committee award to Harrison Bacon, of Barre, the first premium, of $5, for a fine fat cow, seven years old, weighing 1,760 lbs.

The second premium, to Nathan Rice, Jr., for a fat cow, nine years old, weighing 1,380 lbs., $4.

Harrison Bacon, of Barre, presented one fat steer, three years six months old, weighing 1,890 lbs.

For the committee,

Giles H. Whitney, *Chairman.*

Town Teams.

The committee on the largest and best team of oxen from from any town, report as follows:—

One yoke, belonging to D. Crawford, of Oakham, weighing 2,473 lbs.

One yoke, belonging to Pearly Ayres, of Oakham, weighing 2,945 lbs.

Four yoke, belonging to J. P. Butterfield, of Oakham—

1 yoke weighing	. .	3,010 lbs.,	five years old,	
1 "	. .	3,050 "	four	"
1 "	. .	2,045 "	three	"
1 "	. .	1,835 "	"	"

David Lee, *Chairman.*

Sheep.

The committee on sheep, having attended to the duty assigned them, report: That the exhibition of sheep, considering the limited attention paid to that class of stock within the borders of the society, has been highly creditable; and they express a hope that this exhibition, though small, may be the means of calling the attention of our agriculturists to this important branch of their business.

The committee award the first premium to Joseph S. Paige, for his South Down buck, $3.

The second premium to Col. Jas. Robinson, for his Smyrna buck, $2.

For the best lot of ewes: to Martin Wilson, of Barre, four Smyrna ewes, 1st premium, $3.

The committee would recommend a premium of $2 to Abijah N. Wood and Joseph S. Paige, for their three South Down ewes and one South Down buck, though not strictly in accordance with the rules of the society.

One Leicester buck and three Leicester lambs were exhibited by J. B. Woods. The lambs were fine specimens of that breed, and deserving a premium. The committee recommend a gratuity for the same.

For the committee,

Edward Denny, *Chairman.*

Swine.

The committee on Swine have attended to that duty, and report: That in their opinion the exhibition of swine surpasses anything that has been witnessed, and that all that were offered were worthy of a premium. The committee award the following premiums:—

For the best boar, Suffolk, Peter Harwood, Barre, .	$5 00
Next best boar, Suffolk, Nathan Rice, Oakham, .	3 00

Breeding Sows.—For the best breeding sow, Henry Ellsworth, Barre, ... $8 00
Next best, David Rice, Barre, ... 4 00
" " " 2 00

For the best Pigs:—
The first premium to Orin Spooner, Barre, . . $4 00
Next premium to Wilcut Harwood, " . . 3 00
" " H. P. Woods, " . . 2 00
" " Oliver and William Barrett, Barre, 1 00

Peter Harwood, *Chairman.*

Poultry.

The committee on poultry report as follows: The first premium, of $3, for best lot of Turkies, to Harrison Bacon, of Barre.

The second to J. N. Bates, Barre, for best lot of barnyard fowls, $3.

The third to Harrison Bacon, $3.

The fourth to T. B. Crawford, Oakham, $1.

Butter.

The committee on butter have attended to that duty, and beg leave to report:—The committee would remark, that several lots entered do not come within the prescribed rules of the society, requiring that no lots contain less than 25 lbs. The award of premiums is as follows:—

To Charles H. Davis, Barre, 1st premium, . . $6 00
" Henry Ellsworth, " 2d " . . 5 00
" A. H. Fay, " 3d " . . 4 00
" J. W. Jenkins, Jr., " 4th " . . 3 00
" Peter Harwood, " 5th " . . 2 00
" Eri Parlin, Petersham, 6th " . . 1 00

The committee regret that two boxes of very fine butter

belonging to Mr. Roper, of Princeton, did not come within the jurisdiction of the committee.

Respectfully submitted for the committee,

JASON GORHAM, *Chairman.*

CHEESE.

The committee on old and new cheese report the following premiums as awarded :—

First premium on old cheese, to Mr. Asahel Clark, of New Braintree, $5.

Second to Mr. Lorenzo Converse, New Braintree, $3.

First premium on new cheese, to Mr. John Washburn, Barre, $6.

Second to Warner Smith, Barre, $5.

Third to Samuel S. Woods, New Braintree, $4,

Fourth to Mr. Job Ranger, New Braintree, $3.

Fifth to Mr. Lorenzo Converse, New Braintree, $2.

Sixth to Mr. William Robinson, Jr., Barre, $1.

HARDING P. WOODS, *Chairman.*

ROOT CROPS.

The committee on root crops have attended to that duty, and submit the following report :—

They will not deny that they are somewhat acquainted with *roots*, but at the same time aver that they have neither been so addicted to rooting as to need the application of the usual preventative, nor the yoke of the dimensions required by the old statute to prevent their transgressing upon the rights of others, and they do not at present discover the necessity of great exertions to provide for themselves, since they have such an abundance and variety of superior quality brought within their reach. But as they have had neither time nor opportunity to prove their qualities by an epicurean test, they have

formed their opinions from experience and observation only, which are that the carrots, beets, onions, and turnips exhibited by Mr. Charles Ruggles, of Hardwick, were very good and excellent of their kind.

Mr. Otis Allen, of Barre, exhibited fine samples of carrots and onions.

Sumner S. Walker, of Barre, good samples of French sugar beets and mangel wurtzel.

C. Saunderson, of Phillipston, mangel wurtzel, of new variety and good appearance.

Messrs. Joseph Robinson, H. P. Woods, G. H. Lee, Peter Harwood, N. S. Walker, David Fay, David Kendall, Creighton Ruggles, Moses Mandell, Otis Allen, Augustus Muss, Gardner Macomber, J. Addison Merriam, of Barre, and Charles Ruggles, of Hardwick, presented samples of fine appearance and quality.

Mr. W. Jamerson, of Barre, presented a great variety of potatoes, of which no doubt some will prove of great excellence, raised from the ball.

The committee award the first premium, of $5, to David Bacon, of Barre, for his carrot crop. See statement.

The second premium, of $4, to John W. Brigham, of Barre, for his carrot crop.

Respectfully,

GARDNER RUGGLES, *Chairman.*

David Bacon's Statement.

The piece of land I sowed to carrots contained 107 rods; one lot of 38 rods yielded 111 bushels, one lot of 41½ rods yielded 269 bushels, one lot of 28 rods yielded 219 bushels, making in all 599 bushels.

EXPENSE:

Ploughing the land, 1 man and 1 yoke of oxen, .	$2 50
28 loads of compost manure, made of 2 loads of mud to 1 of long manure, $28, one-half to carrot crop, .	14 00
Harrowing and preparing for sowing seed, . .	2 00
Carting and spreading manure, ...	3 00
Carrot seed, ...	1 00
Sowing the seed, ...	1 00

Hoeing, three times,	$20 00
Harvesting the crop,	18 00
Interest on land, at $2 per acre,	7 53
	$69 03

The land was part sowed to carrots two years and part one year.

CREDIT TO LAND.

By 599 bushels of carrots, at 22 cents per bushel,	$131 78
" carrot tops,	3 00
	$134 78
Balance due to crops,	69 03

The crop was principally sold in the field for 22 cents per bushel; those carted two, three, or four miles, 25c. per bushel.

Cost of carrots 11½c. per bushel.

Barre, Nov. 27, 1852.

John W. Brigham's Statement.

I spread four loads of compost manure, then ploughed deep, let the earth lie a few days, then run a cultivator over it to break the lumps, ploughed again with a horse-plough; then bushed it down smooth, sowed with a seed-sower, leaving the rows about 18 inches apart, weeded them three times, thinning them the two first times. Calculated to have them about two inches apart. Sowed the last of May; gathered the crop the last of October; used a plough in digging them; run the plough so as to crowd them out a little, turning the furrow from them.

Cost of preparing ground for seed,	$4 00
Manure,	4 00
Sowing,	75
Seed,	1 00
Weeding, three times,	12 00
Harvesting and marketing,	8 50
Weighing,	1 25
Interest on land, at $2 per acre,	3 00
	$34 50

CR. TO CROP.

By 253 bushels carrots, 50 lbs. per bushel, sold at 25 cents per bushel,	$63 25
Tops,	1 25
	$64 50
Net profit,	29 75

The amount of pounds, 12,650.

The amount of land improved, 40 rods.

Grain Crops.

The committee on grain crops, report as follows:—

The committee award the first premium, of $4, to Martin Wilson, of Barre, for his crop of barley, 77 bushels, raised on 1 acre 54 rods of land.

The committee award the second premium, of $3, to Calvin Earle, of Hubbardston, for his crop of wheat, raised on 2 acres 59½ rods of land, yielding 103½ bushels of wheat.

Calvin Earle's Statement.

The piece of land on which was grown the wheat presented for premium was last year planted with corn, and manured broadcast. Taking the ground in this state the debt and credit is as follows:—

Team and man, 2 days' ploughing,	$3 25
5½ bushels wheat, at $1 50,	8 25
Cultivating in seed,	2 00
Sowing,	1 50
Interest on the land,	12 00
Harvesting,	10 00
Threshing grain,	10 00
Whole amount,	$37 00

CREDIT.

By 3½ tons straw, $6,	$21 00
" 103½ bushels wheat, at $1 50,	155 25
	$176 25
Net profit,	139 25

Hubbardston, Sept. 28, 1852.

Ploughs.

The committee on ploughs award the society's first premium to Mr. Stephen Heald, of Barre, for his sward plough, $5.

Also the second premium to Mr. Heald, for his side-hill plough, $3.

Mr. B. Martin exhibited several very superior looking ploughs.

Charles Rice, *Chairman.*

Fruits.

The committee on fruits report the following: For the best specimens of apples, with reference to their season, qualities, &c.

The	1st premium to	David Kendall, of Barre, . .	$3 00
"	2d "	" Charles Ruggles, of Hardwick, .	2 00
"	3d "	" Peter Harwood, of Barre, .	2 00
"	4th "	" O. A. Tomblin, of N. Brookfield,	1 00

For the best and greatest variety of all kinds of fruit—

The	1st premium to	Dr. J. N. Bates, of Barre, . .	$3 00
"	2d "	" Thos. Bond, of North Brookfield,	2 00
"	3d "	" Moses Ruggles, of Hardwick, .	1 00
Pears.—	1st premium to	Thos. Bond, of N. Brookfield,	2 00
	2d "	" Dr. J. N. Bates, of Barre, .	1 00

For the best specimens of winter squashes—

To Henry Brown of Hubbardston, ...	2 00
For next best, to George H. Lee, of Barre, . . .	1 00

Amasa Walker, *Chairman.*

Farms.

In prosecuting the duties to which they were appointed, the committee were called to examine two farms, the only ones entered for the society's premium, "for the best managed farm,

of not less than one hundred acres, entire regard being had to improvements, and economy in management for the last three years." The applicants not contemplating the entry of their farms for premium until the last year, have failed to make so full a statement of the cost of labor done on their farms, within the last three years on the various parts thereof, and the value and amount of the produce for the same time, as was desirable to enable the committee to make a full and detailed report. To supply this failure the committee were obliged to take verbal statements, and write for themselves such particulars as they could obtain, on inquiry made of the applicants at the time of visiting their farms.

The committee have made their statement of the produce and expenses of the farms, as complete as possible under the circumstances, and they believe it essentially correct, for the present year.

The amount of expense and value of produce, (although the crops were somewhat larger for two years previous to the year 1852,) one taken to be an average of that year, the profits will therefore appear the same for three years.

The first farm visited, is owned by Mr. David Kendall, of Barre, and is situated about one mile south-westerly of the town, and contains 166 acres, and lies on a swell of land on which are found some of the best farms in the town. Beside his farm Mr. Kendall has 67 acres of pasture, on which he keeps a portion of his stock in summer.

The soil of his farm is a dark loam, made up of vegetable matter, sand and clay, based upon a subsoil of clay and sand, and is retentive of water. The farm is divided into 45 acres of mowing, 69 of pasture, 11 of tillage, and 30 of woodland; the remaining 11 acres is occupied by buildings, yards, walls, &c.

There is no lasting water on the farm, except what is drawn by pipes, from eleven artificial wells, sunk at different points on the farm. Mr. Kendall has used, with good success, about three tons of gypsum annually, upon his mowing and pasture lands, at the rate of one bushel to the acre. No other manure is used except what is made from his cattle and hogs, composted with loam, carted from headlands and walls about his fields. He manures his corn, by spreading and harrowing

in, fifteen loads of long manure, and putting fifteen loads of compost in the hill. Manures his potato crops, by spreading and harrowing in fifteen loads to the acre. Ploughs his land for corn in the autumn, from seven to eight inches deep. There are, upon the farm, 500 apple trees, from five to thirty years old, engrafted, and many of them in a bearing state, beside other fruits, as peaches, pears, plums, cherries, &c. Mr. K. has improved four acres of land within the last three years, by removing stones into walls, at a cost of twenty-five dollars the acre, and has also improved his water privileges, by digging new wells, and deepening old ones, and conducting the water into troughs through lead pipes.

The committee found the valuation of Mr Kendall's farm and outlands, upon the assessors books, to be . $7,700 00
The annual interest on which is . . . 462 00

The number and value of his stock, as estimated by the committee is—

23	Cows, at $20 each, ...	$460 00
4	Oxen, at $50 each, ...	200 00
6	Yearlings, at $10 each, ...	60 00
7	Calves, at $6 each, ...	42 00
2	Horses, ...	125 00
10	Pigs and two old Hogs, ...	75 00
1	Two-year old Colt, ...	75 00
1	Nursling Colt, ...	30 00
	All amounting to	$1,067 00
	One year's interest on this amount, is . . .	64 00
	One year's interest on cost of tools, repairing the same, and blacksmith's bills, by estimation, .	50 00
	Annual amount paid for labor, ...	240 00
	My own labor, annually, ...	150 00
	My son's " "	150 00
	The labor in the house is done by Mrs. Kendall, with the assistance of a maid six months in the year, all of which the committee estimate at .	112 50
	Annual expenses of the farm, including interest on stock and cost of farm, ...	1,228 52
	The yearly produce is 5½ acres of Indian corn, yielding 275 bushels, at 92 cents, ...	253 00

	Three-fourths acre of barley, yielding 24 bushels, at 75 cents per bushel, ...	$18 00
3¾	Acres of oats, yielding 200 bushels, at 50 cts,	100 00
1½	Acres of potatoes, do. 500 " 33 " .	165 00
25	Rods of carrots, do. 100 " 25 " .	25 00
60	Cart-loads pumpkins, at $1 50 per load, .	90 00
100	Barrels of apples, at $1 each, . . .	100 00
12	Barrels cider, at $1 per bbl., ...	12 00
160	Bushels of apples, at 3 cents per bushel, .	4 80
75	Tons of hay, at $10 per ton, ...	750 00
10	Tons average of hay, sold annually, . .	100 00
5½	Acres of corn stover, 5½ tons, at $5 per ton, .	27 50
4½	Acres straw, 4½ tons, at $5 per ton, . .	22 50
6,000	lbs. cheese, at 8½ cents per lb., . . .	510 00
200	lbs. butter, at 25 " "	50 00
1,623	lbs. pork, at 8 " "	129 84
2,678	lbs. beef, at 4½ cents, ...	120 51
	The average number of persons in Mr. Kendall's family is six. The estimated value of the produce of the farm consumed by them, annually, is .	300 00
19	Veal calves sold for	113 00
8	Bushels white beans sold for	12 00
	Amounting annually, to the sum of . . .	$2,903 15
	Which, after deducting expenses, interest, &c., .	1,228 52
	There remains an annual income of . . .	$1,674 63

Mr. Kendall's stock of cattle are all of the Durham family, are of good size, but not large for that breed. The twenty-five cows which he milked the present year, are mostly young, and gave, in the best of the season, 459.52 lbs. milk daily, or 19.38 lbs. each; and made 52 lbs. cheese daily, or one lb. for 8.84 lbs. milk.

The annual produce of Mr. Kendall's farm amounts to $17 48 the acre. The annual profits $10 08 the acre.

The committee next proceeded to examine the farm of Mr. David Bacon. The farm lies about two miles easterly of Barre Common, on the slope of two hills, divided by a valley, down which runs a small stream of water, supplying the farm with that element. The farm is divided into 50 acres of pas-

ture, 24 acres of mowing, 19 of wood, and 10 of ploughing land, and contains one hundred and three acres of land. Beside the farm, Mr. Bacon has one hundred acres of out land, a portion of which is depastured by some of his stock in summer.

The soil of the westerly part of his farm, is a dark loam, based upon a retentive subsoil, similar to Mr. Kendall's. The soil of the easterly portion is lighter, less retentive of water, is good for grain, but not so good for grass.

Mr. Bacon purchased his farm in the year 1845, and paid for it, $3,015. The produce was then about one-half what it now is. Mr. B. makes on his farm annually, 325 loads (30 bushels to the load) of manure, 40 loads of green, or long manure from the stable, and 285 loads, composted of one-third stable manure, and two-thirds muck; saw-dust, leaves, straw, or shavings, either or all of which, he believes, answers a good purpose when spread upon grass land, or ploughed into tillage land. He has used gypsum, but derives no benefit from it. Mr. Bacon puts upon his Indian corn land 36 loads of manure to the acre, 18 in the hill, and 18 spread broadcast and ploughed in. Ploughs from seven to eight inches deep; pays little regard to potatoes, preferring carrots, as a more productive crop. He has 170 apple trees on his farm, 100 of them ingrafted, and has other fruit trees, as peaches, pears, &c. Has improved two acres of his land within three years, by removing stones into walls, &c., at an expense of $20 the acre. His cattle are Durhams, of fair size, but not so large as Mr. Kendall's.

Five of Mr. Bacon's cows are three years old, and four two years old. The nine, which he milked in June, gave, in the best of the season, 172.08 quarts of milk daily, and made 19 lbs. of cheese daily, one lb. of cheese to 9.05 lbs. milk.

Mr. Bacon's farm and outland was valued by the assessors, the present year, at . . .		$3,450 00	
The annual interest on which, is			$207 00
The number and value of his stock, as estimated by the committee, is, 8 cows, at $17 50, .		$140 00	
2 Oxen, ...		75 00	
1 Two years old heifer, ...		17 50	
7 Calves, ...		42 00	

3 Horses,	$200 00	
1 Colt,	25 00	
1 Yearling,	14 00	
5 Pigs and 3 old hogs,	60 00	
Amounting to	$573 50	
One year's interest on the same, is		$34 00
Paid for labor, after deducting $54 50 for labor done off the farm,		151 50
Annual value of Mr. Bacon's labor,		150 00
Annual value of Mrs. Bacon's and her daughter's labor, chargeable to the farm,		75 00
5 Tons straw and poor hay, bought,		20 00
Interest, cost of tools, and blacksmith's bill,		40 00
Amounting in all, to		$677 91
The produce of the farm for the year 1852, was—		
3 Acres of Indian corn, yielding 140 bushels, at 92 cents per bushel,		182 80
3 Acres of oats, yielding 160 bushels, at 50 cts,		80 00
1 Acre of rye and oats, mixed, yielding 32 bushels, at 67 cts,		21 44
1 Acre of rye, yielding 22 bushels, at 92 cts,		20 24
$\frac{1}{2}$ Acre of potatoes, yielding 65 bushels, 33 cts,		21 45
107 Loads of carrots yielding 690 bushels, 25 cts,		172 50
25 Tons upland, 5 tons meadow hay,		275 00
Value of butter and cheese sold,		190 00
Value of pork sold,		120 00
Corn husks sold, for mattresses,		28 30
3 Acres of corn stalks, $2\frac{1}{4}$ tons, $5 per ton,		11 25
$5\frac{1}{2}$ Tons straw, at $5 per ton,		22 00
Value of produce consumed by five persons in the family, at $1 each, per week,		250 00
Amounting to the sum of		$1,640 98
Deduct expenses and interest,		677 91
There remains an annual income, of		$963 07

The annual produce of Mr. Bacon's farm is $15 93 per acre; the annual profit, $9 35 per acre.

Mr. Kendall has made more improvements on his farm within the last three years than Mr. Bacon. His cows gave each, less milk daily, but a less number of pounds of milk made a pound of cheese than Mr. Bacon's.

The value of the products of Mr. Bacon's farm are less per acre, and the profits are less than Mr. Kendall's. For economy and good management Mr. Bacon deserves high commendation; but the economy and management of Mr. Kendall is superior, and worthy of imitation, and evinces an active and constant attention to the duties, and a quick and lively perception of the beauties of rural life.

The committee award to Mr. David Kendall, the society's premium of $20, and to Mr. David Bacon, the society's premium of $10.

Respectfully submitted, by

JOHN BROOKS,
JOB RANGER, } *Committee.*

HAMPSHIRE, FRANKLIN AND HAMPDEN AGRICULTURAL SOCIETY.

Farms.

The committee on farms report, that the following persons entered their farms for premium, viz.: Moses Stebbins, of South Deerfield; Josiah Allis, Jr., of Whately; Linus Green, T. P. Huntington, and William P. Dickinson, of Hadley; and that the committee proceeded to view the farms thus entered, in the month of June, and also in the month of September last, agreeably to the instructions of the executive committee.

All of the above farms are located in the Connecticut Valley, and four of them on or near its banks. The committee were highly gratified with the general appearance of the farms, modes of culture adopted, and methods of increasing the quantity and quality of manures. All of them are so situated as abundantly to compensate the efforts put forth for their improvement, and to become model farms. And here your committee beg leave to state their regret that no farms were entered from the hill towns, on which valuable improvements can be made, and have been made, which would favorably compare with the more smooth and level lands of the valley.

Your committee are satisfied that the two cardinal points in farming, and so often insisted upon and recommended, are yet too much neglected by the great mass of our farmers, viz.: the reduction of the number of acres improved, and the accumulation of larger quantities of manure. We have evidence of the value of these points in the success which has attended the cultivation of the farms presented for premiums; they are comparatively small, yet the amount of their products is large, as will be seen by their several statements.

The farm of Mr. Linus Green is in very fine condition; his system of management is not often excelled. He understands

the value of deep ploughing, regular rotation of crops, and makes large quantities of manure, personally superintends his business, and is not afraid or ashamed daily to off coat, and at it. He may be considered somewhat of a model farmer.

Mr. Moses Stebbins cultivates a small farm with much success; his estimates show a great degree of productiveness. He obtains valuable manure from the deposits of Connecticut River. Your committee, in ascertaining the amount of the products of a farm deem actual weight and admeasurement of much more value than mere estimates.

Mr. Huntington has a small farm, of great productiveness, a portion of which is a light soil. He has greatly improved his acres by a judicious system of underdraining, and possesses a valuable source of improvement to his farm, of which he abundantly avails himself, in the shape of a lot of muck. We rejoice to find that Mr. Huntington is the principal laborer on his own farm.

Mr. Allis showed us his farm and buildings, which, under his energetic management, bids fair to become one of the most productive farms in that vicinity, and his buildings and their appurtenances will soon be in a condition to answer all his expectations. He has a mine of wealth which he duly appreciates, and the fine condition of some parts of his farm, and the heavy crops of this season, show the value of the black mould of his bog meadow. He raised, this season, six acres of tobacco, which in September last was a most luxuriant crop, and in the opinion of the committee, will be of much greater profit to the producer than to the consumer.

Mr. Dickinson has a farm, on which he has made extensive and valuable improvements. A part of his lands are cold and low, and were, a few years since, quite unproductive; but under his skilful management, with drains and manure, an old, unsightly and bushy pasture, has become pleasant to the eye, and productive to the owner. He showed the committee a fine piece of corn raised on land of a lighter grade. We congratulate Mr. Dickinson on his judgment and forecast, as exhibited in his preference of the quiet life of the farmer, to the noise and confinement of the city, and the temptations and uncertainties of mercantile life.

There are probably within the boundaries of this society,

many farms quite as productive as those viewed by your committee, that were not entered for premium, and the views of this society in offering premiums on farms being prospective, the committee do not feel justified in awarding at present, the highest premium to either of the competitors, and would recommend the continuance of these offers for the next year.

Mr. Green, having received the highest premium from a society receiving the bounty of the State, the committee do not deem it proper to award him a premium at this time.

Mr. Allis and Mr. Dickinson, not having returned the required statement of the amount of the productions of their farms, cannot claim an award.

Your committee recommend, as an act of encouragement, that the third premium of $20, be awarded to T. P. Huntington, of Hadley.

All which is submitted.

Elisha Edwards, *Chairman.*

Northampton, Jan. 1, 1853.

Linus Green's Statement.

My farm, of one hundred acres, is in Hadley. In its management, I have always aimed at the most economical improvements. The quantity of produce may have been greater in some former years; but, viewed with reference to the manner and expense of cultivation, the yield of the present year has been very abundant. The farm, in its general appearance and appendages, is in excellent order. It lies in one body, and is all in cultivation. It contains 48 acres of excellent pasture, 32 acres of fine mowing, and 20 acres in tillage. Two-thirds of the soil is clay, and the remainder is gravelly and light. I have made it out of swampy fields, overgrown with alders and brush, and of worn out, poor land, by twenty years of hard labor. There is not half an acre that I have not ploughed. Among the results of economical experiments, I mention deep ploughing not less than eight to nine inches, which I now practice. By systematic rotation of crops, my farm improves annually in its productive qualities. I find it profitable to compost all my manure with lime for top-dressing; to mix seed corn, and to mix grass seed. On moist land,

I mix a half bushel of redtop with one peck of herds-grass. The labor has been performed this year by myself and two boys, one of seventeen, and the other of fifteen years.

PRODUCTS.

65	Tons of hay, at $15,	$975 00
497½	Bushels corn, at 75 cents,	373 12
353	" oats, at 50 "	176 50
60	" rye, at 75 "	45 00
50	" potatoes, at 33⅓ cents,	16 67
25	" turnips, at 25 "	6 50
75	" winter apples, at 33⅓ cents,	25 00
150	Pounds of butter, at 16⅔ "	25 00
150	" of cheese, at 7 "	10 50
375	Loads compost manure,	375 00
100	" barnyard "	100 00
	Pasturage of 15 horned cattle, 26 weeks,	150 00
	" 75 sheep, 26 "	43 00
	Increase of sheep,	100 00
	Total,	$2,421 29

EXPENSES.

225	Days, my own labor, at $1 00 per day,	$225 00
135	" boy's " 75 "	101 25
208	" " " 50 "	104 00
	Grass seed,	15 00
	Seed corn, 1½ bushels, at $1 00 per bushel,	1 50
	" oats, 16 " 50 "	8 00
	" rye, 4 " 75 "	3 00
	" potatoes 3 " 50 "	1 50
	Compost manure, 375 loads, at $1,	375 00
	Barnyard " 100 " $1,	100 00
	Interest on value of land, at $50 per acre,	360 00
	Taxes,	57. 00
	Total,	$1,351 25
		2,421 29
	Net income,	$1,070 04
	Average profit, per acre,	10 70

T. P. Huntington's Statement.

Gentlemen,—My farm having been duly entered for a premium, and having passed the inspection of your most honorable body, it remains for me, in complying with the conditions of the premium, to offer for your further consideration the following statement:

My farm consists of about 50 acres. Of these, 10 acres are meadow land, including the grounds about the buildings; 15 acres besides are considered good tillage land; five acres of wood on Mount Warner; and the remaining 20 acres are sandy; 12 of which are occasionally cropped, and the remainder, being difficult of access, are left to nature.

I usually hoe of the 25 acres, about six, put in winter and spring grain about four, and in grass 15. My corn averages about 55 bushels per acre, broom corn about 700 lbs., oats 35 bushels, and grass one and a half tons.

I spend annually a considerable amount of labor and manure in experimenting with the sandy hill, which has robbed, to some extent, other portions of the farm. I am now endeavoring, with the help of muck, to get clover growing, and think I shall succeed.

My main objects in farming, have been, not so much to obtain extra crops, and realize great profits, as to improve the general appearance of the farm, to make productive waste places, and to save and make manure. Whether I have been successful in either of these particulars, your committee have full opportunity to judge, and on that account it is not necessary here to go into details.

PLOUGHING.

This is the farmers' jubilee, and we feel more like being merry than sedate, especially as we now have the presence of those who cheer all occasions; and we may congratulate ourselves that we have passed beyond those days of incivility and bad taste, when we used to assemble on similar occasions as though we had no mothers, sisters, wives, or daughters, in the community.

But the plough demands that we consider him who furrows the land, without particularly alluding to those who disperse the furrows from his brow. We will remark, however, that each process is essentially improved by matches, and we are happy to say that the good old fashion is not likely to be given up in either case.

To show that trials of ploughs and ploughing matches have improved the plough we will mention a few facts.

Not many years since, nearly all the turf ploughing required two pairs of oxen or horses, and at a ploughing match here was seen such a team, with two 56lb. weights fastened to the plough to keep it in the ground; but now it is mostly performed by one pair, with the same ease and much better.

This gain in draught is easily accounted for by referring to experiments made a few years since, by a committee to award $100 for the best plough presented from any part of the United States. Of course, the various ploughs offered were considered the best kind, and care had been taken to put them in perfect order, and yet, an accurate test with the Dynamometer, which weighed the draught of each plough, proved there was a difference of 50 per cent., and that one pair of oxen would as easily turn a furrow with one plough as two pairs of oxen would turn the same furrow with the other plough. And another advantage: the quality of turf ploughing was improved in proportion to lightness of draught. In this particular we are fortunate, but there is doubt whether lightness of draft in ploughs for stalk or stubble land is attainable. It is of importance that the work should be performed in the best manner, with the least power and cost.

The agricultural community now demand of our persevering and scientific plough makers, to do for the stubble or stalk land plough what they have already accomplished for the turf plough. The stubble plough should imitate the gardener with his spade, and throw the earth with force, to pulverize it.

A plough is wanted in this valley to turn under broom corn stalks in the fall. One constructed for this use was exhibited two years since, at the same time of the ploughing match, and attracted much attention, which interest is increasing, and the plough makers are improving their ploughs for this purpose.

However science or practice may have induced deep plough-

ing in other sections, it is little approved of here. The bad effect of ploughing turf land deeper than usual has been observed this year on those pieces so ploughed last year at the ploughing match.

The double plough has advantages which will be better appreciated when it is more fully introduced. It pulverizes the turf sod as though it were stalk or stubble land.

The subsoil plough has been little used with us, but there is no doubt of its benefit. It can be used on land that is free from large stones and roots to loosen the earth below the roots of grass, without turning the sod or destroying the beautiful English grass, which is so desirable.

This plough, in grass land, makes a cut through the sod similar to a coulter, and leaves the turf raised some inches by loosening the earth below its roots.

Premiums should be offered for narrow furrows, because the power and worth of any form of plough is more fully tested as the earth is more completely pulverized, and the ordinary small team of a farm will work them faster and easier. And if a small one will turn a deep and narrow furrow, we may be sure the same form, in a large size plough, will, with greater certainty, turn an equal depth and a wider furrow.

Cast iron ploughs have been objected to on account of their weight, but we need have no fear on that score, if we consider how much easier the cast iron sled shoe passes over bare ground than wrought iron or steel.

The steam plough is working successfully in England, ploughing land for 62 cents per acre, which in the ordinary way costs $2. We may soon see the iron horse turning furrows in this valley, and with his dozen ploughs, each throwing its stream of earth, pulverized and spread upon the land, as the snow-plough sifts its fleecy flakes when driven by the steam engine.

Your committee found not a little difficulty in awarding premiums, many lots being equally well ploughed for cultivation. We were obliged, therefore, in forming our decision, to notice the ploughman's skill at setting in and ending the furrows, as also the clearing the last furrow.

The ploughing was well done; several lots would not suffer by comparison with any match in the United States.

Two improved double ploughs, from the manufactory of Ruggles, Nourse & Mason, of Worcester, attracted attention, not only for novelty, but by their peculiar power of pulverizing the grass sod, and by uniting in one the best plough for turf and stubble land.

PREMIUMS.

Twelve horse teams, seven ox teams, and three teams with double ploughs, were entered for premiums.

On lots ploughed with horses.

1.	Giles E. Smith, Hadley,	$8 00
2.	William Strong, Northampton,	7 00
3.	Joseph B. Parsons, "	6 00
4.	D. W. Clark, "	5 00
5.	Enos Clark, Jr., "	4 00
6.	Ebenezer Strong, "	3 00
7.	George Dickinson, Hadley,	2 00
8.	Phinehas Bridgman, Belchertown,	1 00

Ploughed with oxen.

1.	Edmund Smith, Hadley,	8 00
2.	Samuel L. Parsons, Northampton,	6 00
3.	William Clark, "	4 00
4.	Henry Strong, 2d, "	2 00

Double ploughs.

1.	D. Munroe Clapp, Northampton,	5 00
2.	Elisha Strong, "	4 00

HENRY SHEPHERD, *Chairman.*

HORSES.

The horse may justly be considered one of the noblest animals in creation, and your committee are gratified in noticing the increased interest which is felt among farmers in this vicinity in improving our stock of horses.

There is no enterprise, if rightly engaged in, to which the farmer or breeder may look with a greater confidence of success and profit than this.

Upon the introduction of railroads into our country, the belief was cherished by many that the demand for horses would be so materially lessened, that the effect would be to lower the price. But what is the result? The number of horses in Massachusetts has increased from 60,000, in 1840, to 75,000, in 1850, while the price has been constantly increasing.

There is no more difficulty or uncertainty in breeding a fine horse than in raising a crop of corn, when the same consistent principles are adopted. It is true both may fail, but the former no more likely to than the latter.

In the first place, to breed a fine colt, or a horse, the sire must possess four things, at least, in the fullest perfection—form, motion, carriage, and constitution. These are absolutely indispensable, but can never be found to much extent in an overgrown animal, and at the same time we would avoid, as a general thing, a pony stallion. Another thing is also essential in selecting your stock horses. A sire should never inherit any bad blood from his ancestors, for he will be more likely to sire stock like his degenerated kindred than like himself, and for this reason too much care cannot be exercised in the selection of your sires.

There should also be great care in the selection of your breeding mares, and when right views are entertained upon this subject, it will not be considered unprofitable, or out of place, to select the best mares we have for this purpose, and experience will fully demonstrate that much, very much, depends upon this.

If we wish to raise good horses we must adopt fundamental principles, as laid down in nature's laws, which will always prove true in practice, and when this is done we shall not be behind our neighbors in New York and Vermont, who have been eminently successful in this business, and are now reaping the reward of their labors.

The idea that it makes but little difference what kind of treatment a colt receives the first winter, is also very erroneous. Great care and attention is necessary that your colts be kept growing and thrifty. Your committee the last year referred to the practice of winter hardening, as it is sometimes called, than which nothing can be more detrimental. Those who have had the most experience have found that inattention the first win-

ter seriously affects the growth of their colts. It may take the whole of the next season to recover what is lost by want of care the first winter. Although we would not advise a close stable for colts, still they should have a warm shelter from winds and storms.

The want of attention in all these particulars is one great reason why our farmers are not more amply remunerated for the labor and expense attending this enterprise. When the theory of raising horses is rightly understood, we shall have horses, which for size, speed, symmetry of form, and beauty of action, cannot be excelled, and we shall no longer hear the cry that it is unprofitable business to raise colts.

Your committee regret so few entries of stallions, and that no more competition has been manifested—although aware that the rules of the society exclude all who have been heretofore awarded the first premium; and we would suggest, that perhaps, some new arrangement, in this respect, might be adopted hereafter, which would materially add to the interest of such an occasion, and stimulate to a greater degree of emulation. At any rate it is very desirable that all who have superior stock horses should present them for exhibition, even if they come under the restriction above named.

Under the present rule it may sometimes occur that horses of little merit may be awarded the first premium, and more likely to be so when there are but few competitors.

The whole number of entries in this department were sixty-seven, and in the opinion of your committee the exhibition of geldings far exceeded that of former years.

It was thought best by the chairmen of the several committees that a general report should be made on this subject, and the following premiums are recommended as the result of our separate examinations. All which is respectfully submitted.

For the committee,

H. A. Longley.

PREMIUMS.

Stallions.

1. Benjamin Baggs, Ludlow, ...	$10 00
2. Alfred H. Hill, Belchertown, ...	5 00
3. D. Gilbert, Worthington, ...	3 00

Breeding Mares.

1. Samuel C. Pomeroy, Southampton, . . . $5 00
2. Edmund Smith, South Hadley, ... 3 00
3. C. May, Conway, ... 2 00

H. Longley, *Chairman.*

Carriage Horses.

1. Ebenezer Strong, Northampton, ... $6 00
2. J. D. Brown, Hatfield, ... 5 00
3. Ebenezer Strong, Northampton, ... 4 00

H. W. Clark, of Northampton, presented a fine pair of carriage horses, but not in season for the committee to examine them.

Horses for Draft.

1. David Moseley, Westfield, ... $6 00
2. Ebenezer Strong, Northampton, ... 5 00
3. Cyrus M. Parsons, Worthington, ... 4 00

S. C. Pomeroy, *Chairman.*

Geldings.

1. Ebenezer Strong, Northampton, ... $5 00
2. Levi Graves, Hatfield, ... 4 00
3. David Aiken, Greenfield, ... 3 00
4. Newman Bartlett, Williamsburgh, . . . 2 00
5. Joseph I. West, Northampton, ... 1 00

The committee also recommend a gratuity of two dollars to John D. Brown, of Hatfield, and of one dollar to Edmund Smith, of Hadley.

Three Years Old Colts.

1. Franklin R. Joy, Cummington, ... $4 00
2. O. Moore, Montgomery, ... 3 00
3. Edward A. Clark, Easthampton, ... 2 00

Two Years Old Colts.

1. Henry Moody, South Hadley, ... $3 00
2. Julius F. Clark, Easthampton, ... 2 00
3. Jonathan Brewster, Worthington, ... 1 00

One Year Old Colts.

1. Mala Cowles, Belchertown, ... $2 00
2. Chester Phelps, Northampton, ... 1 00

The committee also recommend a gratuity of two dollars to Josiah Brown, of Hatfield.

Josiah Brown, *Chairman.*

Manures.

William P. Dickinson's Statement.

In the fall of 1851, I ploughed a field of nine acres, which had been pastured for ten years, and sent a sample of it to Professor Norton for analyzation: he found it very deficient in lime, sulphuric acid, and chlorine, and advised an application of oyster-shell lime, plaster and salt. I made a mixture of ten bushels of lime, two and a half of plaster, and half a bushel of salt for each acre, and put a handful in the hill at the time of planting. I left two and three rows in a place in different parts of the field to see the result. Through the early part of the season, these rows could be distinguished from the others thirty rods from the field, by their yellow appearance, and less vigorous growth. This difference continued throughout the season, and at the time of harvesting, the difference in favor of the rows which were limed, was by good judges said to be one-third.

I also put some of the lime upon grass, and the spot can easily be selected by its fresh green appearance, compared with that surrounding it. The lime cost 12½ cents a bushel, at Northampton. The whole expense per acre could not have exceeded $2.

I have just finished husking one acre, which yielded 126 bushels of ears, with only eight loads of compost manure on it.

Hadley, Oct. 27, 1852.

A gratuity of $5 was awarded.

[The above is regarded as a very interesting and successful experiment, and has attracted the attention of many farmers

in the neighborhood, by whom it will probably be tried the coming season.]

Carrot Crop.

William P. Dickinson's Statement.

The crop of carrots which I offer for your inspection, was grown upon one-quarter of an acre of ground. The land had a crop of carrots upon it last year, and was in good condition. About the middle of May I plowed it eight inches deep, then spread six loads of manure, and harrowed it; then, with a small plough ridged it up, and sowed a quarter of a pound of seed with a machine, upon the top of the ridges; the rows were eighteen inches apart, and the plants from three to four inches: they were harvested the last of October.

EXPENSES.

Ploughing and harrowing,	$1 00
Seed and sowing,	50
Manure and weeding,	12 00
Harvesting,	4 00
Total,	$17 50

PRODUCE.

182 Bushels, (50 lbs. to a bushel,) at 33⅓ cents per bushel,	$60 67
Tops,	2 00
Total,	$62 67
Expenses,	17 50
Profit,	$45 17

The whole weight was 9,100 lbs.

Hadley, Oct. 27, 1852.

A premium of $6 was allowed.

Rye Crop.

T. P. Huntington's Statement.

The piece of land upon which a crop of rye has been raised by me the past season, and which is entered for a premium, contains one acre and 125 rods. It had been under the plough three seasons previous to this. The first year it was planted to corn, the next two to broomcorn. The soil is a clay loam, retentive of moisture, and of course inclined to heave in frosty weather. I was advised not to attempt the raising of a crop of rye, lest it should become winter killed. Wishing, however, to try the experiment, and with as little risk as possible, I adopted the following plan. As soon as the broomcorn was cut, the stalks were carefully ploughed in. A bushel of seed per acre was sown, and the ground was then rolled and thoroughly harrowed. My theory was, that the cornstalks would absorb the surplus water, so as to act as underdrains through the winter and spring. The result answered my expectations, as I am not aware that the crop was in the least injured by frost.

Some parts of the field were lodged, so that the berry was not as full as it would otherwise have been.

I would observe also, that an acre might have been selected on which the yield might have been considerably larger than it was on the whole lot.

The account stands as follows:

DEBIT.

To	plowing,	$3 00
"	Sowing,	25
"	Two bushels of rye,	1 67
"	Rolling and harrowing,	1 75
"	Cutting, binding and stacking grain,	5 00
"	Carting grain,	1 75
"	Threshing do.,	5 00
	Total,	$18 42

CREDIT.

By 58 bushels rye, at five shillings, ...	$48 33
" 2 tons of straw, at $8, ...	16 00
Total, ...	$64 33
	18 42
Profit, ...	$45 91

HADLEY, Dec. 30, 1852.

A premium of $5 was awarded.

CORN CROP.

Moses C. Porter's Statement.

The following is a statement respecting one acre of Indian corn, raised by me in the summer of 1852.

The land it was raised upon had been kept for a cow pasture for some years past, and was, when ploughed, good English turf. I ploughed the land on the 11th of May, rolled and harrowed it well, put the manure in the holes, which were three feet and a half apart, and the rows were three feet apart. I put plaster of Paris upon the manure before planting, and applied the ashes upon the hill after the first hoeing. The corn was hoed four times; the horse and harrow were used, the first three times, and the fourth time it was hoed plain. The seed used was the eight-rowed corn. The corn was cut up at the roots and stacked until dry enough to put into the barn. The value of the labor performed was $21. The value of the manure, which consisted of five loads of green horse manure, eight bushels of ashes, and one bushel of plaster of Paris, was $9 50. The produce was 112½ bushels of shelled corn, and 3½ tons of fodder. The corn was measured by husking it in a two-bushel basket, and then shelling one basket, and multiplying the amount by the number of baskets.

HATFIELD, Oct. 29, 1852.

A premium of $10 was awarded.

Stock.

Your committee feel exceedingly embarrassed in making out their report, from the fact that there were so few entries of each kind of animals on exhibition. Two reasons, in our opinion, obtain to render the show so meagre, viz.: the numerous fairs in the old county of Hampshire—there being one in almost every town of much magnitude,—and the extreme drought in the early part of the summer, from which the pastures have not fully recovered. There were no entries of fat cattle, or of teams, which rendered the show apparently uninteresting. In some of the departments the animals were never more numerous, or of superior quality. Although no fat cattle were exhibited, your committee do not believe old Hampshire county will be deprived of excellent beef the coming winter, neither do we believe their Brighton customers will fall short of their wonted quantity of prime beef. Although no teams were entered for premiums, we know the patient ox is yet the motive power for the farmer, and no substitute can supply the place of that animal.

Your committee do not feel that there is any lack of interest or encouragement to grow the most valuable breeds of stock. Docility and symmetry, and endurance, are qualities the farmer has an eye to as he reckons his profits.

Of working oxen there were but ten entries, and the animals were generally of an inferior quality; yet there were a few noble exceptions. The simple fact that there are so many shows on all sides of us, of itself carried full conviction of the increased interest in these exhibitions. We feel assured of growing interest, and confidently expect, if the season be favorable another year, to see more than our usual number of teams and fat cattle.

The show of steers—there being only ten entries—was much less than usual, and we can only account for it, from the fact that there is so short a crop of hay that the farmers have been obliged to turn everything for beef that has become fit for market.

Of cows and heifers in milch there was a fair show. Of heifers there were eleven entries, all of such quality as to give credit to the exhibition.

The show of bulls was never superior, in quality or number. The different breeds on exhibition were the Durham, the Devon, the Hereford, and the Ayrshire. These beautiful and superior breeds show that the farmers are awake to their interests, and will be slow to allow their stock to degenerate, either in beauty or profit. Their docility and symmetry were especially marked, which always merits and receives approbation in such animals.

Of miscellaneous stock there were only four entries,—two pair of twins, large and nice, and seven yearlings, offered by Benjamin Coit, of Norwich, which reflect much credit upon their breeder. Under this class a cow, offered by T. G. Huntington, of Hadley, merited, as it received, a premium of $3.

In respect to sheep, your committee regret that no more attention is paid to the growth of this timid yet profitable animal, as no stock will better enable the farmer to educate his children or pay his taxes. Farms that are often taken up for rotation of crops are peculiarly adapted to this animal. Some of the specimens exhibited were of superior quality; others, especially adapted by their heavy fleeces for course fabrics, and for the shambles, may be a source of profit to the farmer, particularly the Cotswold breed. They are said to be very quiet in their habits, which induces fatness, and we see not why they are not *the* animal for the farmer.

In reference to swine, your committee are happy to say, that this exhibition exceeded that of all former fairs. There were ten entries, and all of the first class—trim, having small bones and small ears, and not of the Albany breed, with ears like corn fans, and built for racers, but having short noses and short limbs, looking for all the world the very personification of lazy, fat porkers.

Finally, we would say to the farmers of this society, be watchful in the improvement of the breeds of your stock, so that it shall become a source of profit to yourselves, and to the generations who shall succeed you. This society can and ought to exhibit as fair specimens as can be found in this country; and if there be no abatement in your endeavors to improve your stock, you will go on as you have done, improving and profiting yourselves and your neighbors on all sides of you. Go on and prosper.

PREMIUMS.

Working Oxen—Ten entries.

1. Edward Smith, South Hadley,	$8 00
2. Aretus Pomeroy, Southampton,	7 00
3. James M. Chapman, Westhampton,	6 00
4. Edmund Smith, South Hadley,	5 00
5. Samuel L. Parsons, Northampton,	4 00
6. L. N. Granger, Hadley,	3 00
7. Henry Strong, 2d, Northampton,	2 00

Three Years Old Steers.

1. Hervey Judd, South Hadley,	6 00
2. Washington Stevens, Norwich,	4 00
3. George Dickinson, Hadley,	2 00

A gratuity of $1 to Edmund Smith, of Hadley, recommended.

Two Years Old Steers.

1. Chester Gray, Hadley,	4 00
2. Parsons West, Hadley,	2 00

Cows.

1. Samuel Bartlett, Hatfield,	8 00
2. Orrin R. Moore, Southampton,	7 00
3. Dr. Samuel A. Fisk, Northampton,	6 00
4. Silas B. Sheldon, Southampton,	5 00

Heifers.

1. Justin Thayer, Northampton,	4 00
2. Orrin R. Moore, Southampton,	3 00
3. J. Smith Parsons, Northampton,	2 00
4. T. G. Huntington, Hadley,	1 00

Yearling Heifers.

1. J. C. Adams, Norwich,	2 00
2. Hervey Judd, South Hadley,	1 00

Bulls.

1. Paoli Lathrop, South Hadley,	8 00
2. Jotham A. Clark, Granby,	6 00
3. Dexter Allis, Hatfield,	4 00
4. Samuel Tinker, Chesterfield,	2 00

The committee recommend a gratuity of $2 each to George W. King, of Chesterfield, and Oliver Williams, of Sunderland.

Miscellaneous Stock.

Samuel Pitcher, Chesterfield,	$2 00
Seth Lathrop, South Hadley,	2 00
Benjamin Coit, Norwich,	2 00
T. P. Huntington, Hadley,	3 00

Swine—Boars,

1, James Morton, Hatfield,	4 00
2. T. P. Huntington, Hadley,	2 00

Sows and Pigs.

1. T. P. Huntington, Hadley,	5 00
2. Hubbard Graves, Sunderland,	3 00
3. William Clark, Jr., Northampton,	2 00

Sheep.

1. C. N. Montague, South Hadley,	4 00
2. Benjamin Coit, Norwich,	2 00

A gratuity of $2 for a Cotswold buck, to Moses Montague, of South Hadley.

N. Lyman Strong, *Chairman.*

Poultry.

The committee on poultry beg leave to submit the following report: * * * * *

Four important requisites to success in managing fowls, are, that they have ample space, thorough ventilation, perfect cleanliness, and a sufficiency of good food. They probably never do so well closely confined, as when allowed an extensive range. Too many individuals should not be kept together. Thirty are as many as will thrive, and a less number would be better. Food should be kept constantly before them. They will not eat so much, and yet keep in better condition, than when fed at intervals. Corn appears to be their favorite article of diet. A saving is made by boiling it, or by using meal mixed with potatoes, or some other vegetable, and given warm.

This is very desirable in cold weather. Vegetables and fresh meat are necessary for health, and are highly conducive to the production of eggs. It is absolutely necessary to have some proper material within their reach of which to make the shell, such as old mortar, pounded oyster shells, burnt bones and coarse gravel.

In selecting the kind of fowls to be kept, the particular object to be attained will somewhat vary the choice. If the flesh be sought, some of the larger kinds, or perhaps a cross of the larger and smaller, will best answer. But it is believed, that at the same cost of keeping, the smaller breeds will produce the greater weight of eggs.

All hens will lay well if properly cared for; but there are some breeds which have a particular inclination to do so. Among these stand foremost the Bolton Greys, Poland, and Spangled Hamburgs, and even the common barnyard fowl, will not suffer in comparison with many of her more showy competitors. Every door yard has a supply of the latter, which if judiciously managed, can be brought into a profitable way with little expense, thus avoiding the necessity of paying the extravagant sums demanded for some of the new varieties.

The display of poultry this year was equal if not superior to that of any previous exhibition. The variety was greater, and there were two or three breeds represented for the first time. The reputation which the Bolton Grays and Spangled Hamburgs possess, for laying properties, would seem to demand for them more attention in future. The specimens of turkeys and ducks were very fine, causing some embarrassment in the selection of those most worthy of premiums.

The whole number of entries was fifty-nine.

Premiums were awarded to the following persons. There was only one entry of Chittagongs, consisting of two pairs. To the owner of these, Moses White, of Hadley, was awarded the first premium of 2$; also the second premium of $1.

There were but two entries of Cochin Chinas, for these, Benjamin Barrett, of Northampton, received the first premium of $2; also the second premium of $1.

White Shanghaes,—J. W. Wilson, of Northampton, receiv-

ed the first premium of $2; Red Shanghaes,—Moses White, of Hadley, the second premium, $1.

Dorkings,—H. Bartholomew, of Northampton, first premium, $2; Master Frederic W. Arnold, of Northampton, second premium, $1.

Polands, (Golden Polands)—Walter W. Pease, of Northampton, first premium, $2; Mrs. Dr. Woodward, of Northampton, second premium, $1.

Common and mixed stock,—Charles W. Lyman, of Northampton, first premium, $2; Edward B. Barrett, Northampton, second premium, $1.

Bantams, (Seabright)—F. Bester, of Chesterfield, first premium, $2; (common) Mrs. Dr. Woodward, second premium, $1.

Turkeys,—Moses White, of Hadley, first premium, $2; Edward Parsons, of Northampton, second premium, $1.

Ducks,—F. W. Clark, of Northampton, first premium, $2; Thomas Jewett, of Northampton, second premium, $1.

Doves,—Master F. W. Clark, of Northampton, the premium, $1.

[Sundry gratuities were also awarded.]

F. Bonney, *Chairman.*

Bread, Butter, and Cheese.

The committee on bread, butter, and cheese, respectfully submit the following report:— * * * * *

It may be worth while to suggest to bread makers, that they ought to aim at a greater variety in the kinds of bread. If any body thinks that all men should agree in small things as in great, we advise him to read the half hundred statements of processes which were pinned to as many loaves, on exhibition in the hall. And yet they all come to pretty much the same result. Family bread is one thing—all our loaves are mainly of one type, and we think that the staff of life would be more interesting and less likely to be put aside for the broken reed of rich cake, if it were varied a little, though it were only in form. A roll, a twist, anything would be some relief from the

unchanging loaf. Soda biscuits, we admit, are unexceptionable; but then, one does grow tired of them in the course of a long winter, and a trip to the French baker's or somewhere else, might be of service. The times have changed since "Abraham hastened into the tent unto Sarah and said, make ready quickly three measures of fine meal, knead it, and make cakes upon the hearth." Our bread making, as well as other things, should be various and progressive.

We may add, that although four premiums were offered for four different sorts of bread, one variety was represented only by one, and another only by two specimens. Those who are mighty in cakes and pies, which profit little, should turn their strength in this direction.

Your committee found the usual difficulty in deciding between the various loaves of bread, and they hope that in what is so plainly a matter of *taste*, great charity will be shown to their decisions. Scarcely a loaf was on exhibition which would not have satisfied any reasonable person.

The samples of butter were, for the most part, of a very superior quality, well flavored, and thoroughly worked. The specimens of cheese, though not numerous, were highly satisfactory.

Besides an entry, unacccompanied by any statement, there was but one sample of "the best produce of butter on any farm within the county, for four months, from the 20th of May to the 20th of September, sample to be not less than twenty pounds, with a full account of the manner of feeding the cows, and the management of the milk and butter." Fortunately, this was of a superior quality.

The following is the record of

PREMIUMS.

Butter—Eighteen entries.

1. Edward Clapp, 2d, Northampton,	$4 00
2. Simeon Clark, Amherst,	3 00
3. Willard Judd, South Hadley,	2 00
4. Mrs. J. B. Graves, Northampton,	1 00

Cheese—Four entries.

1. William Tilton, Goshen,	4 00

2. West Tilton, Goshen, ... $3 00
3. William H. Bates, Worthington, ... 2 00

Bread—Fifty-seven entries.

Best wheat bread, Mrs. Chas. D. Hale, Northampton, 2 00
Second best, Mrs. O'Brien, Northampton, . . . 1 00
Gratuity to Mrs. William Clark, Jr., Northampton, . 1 00
Best rye and Indian, (the only entry,) Georgiana M. Wright, Northampton, ... 2 00
Best rye bread, (gratuity,) Mrs. Samuel Williams, Northampton, ... 2 00
Best unbolted wheat, Mrs. Edward Parsons, Northampton, ... 2 00
Best produce of butter for four months, T. P. Huntington, Hadley, ... 5 00

Rufus Ellis, *Chairman.*

HAMPDEN COUNTY AGRICULTURAL SOCIETY.

Grain Crops—wheat.

Amos M. Carleton's Statement.

The crop of wheat, which I offer for premium, was raised on one acre of land, the soil being a sandy loam. The preceding crop was corn and potatoes. Five cords of barnyard manure were spread, before planting, upon the land, which was ploughed eight inches deep. After the corn and potatoes were harvested, the land was again ploughed and harrowed before sowing. One bushel and twelve quarts of wheat were sowed, and the ground harrowed twice more.

The above crop, when threshed, yielded thirty-two bushels, weighing sixty-one pounds per bushel, and sold at one dollar fifty cents per bushel, amounting to . . $48 00

One and one-half ton straw, . . .	9 00	
		$57 00
Expenses for ploughing and harrowing, .	$3 00	
" " seed, ...	2 75	
" " threshing and cleaning, . .	3 00	
" " marketing, ...	1 50	
" " rent of land, ...	10 00	
" " harvesting, ...	3 00	
		$23 25
Net gain, ...		$33 75

The directors award to Amos M. Carleton, of Chicopee Falls, the first premium, of $5.

[Allow one bushel extra as standard requirement, at 60 lbs. per bushel, making 33 bushels, at a cost of 70½ cents per bushel.]

CORN.

W. Cooley's Statement.

The corn crop which I offer for premium was raised on one acre and a half of land, which had been in grass for five years, and been mowed annually without receiving any manure. Last spring it was ploughed, and about five cords of compost manure spread upon it to the acre. The land was then harrowed and planted in hills, three feet apart each way; the cultivator was used at the first and second hoeing and a light plough for the third. The corn was ashed in the hill. I have harvested 132 bushels of corn, equal to 88 bushels to the acre.

Value of the crop, at 90 cents per bushel,	$118 80	
Three tons of fodder, ...	21 00	
		$139 80
Expenses for ploughing and harrowing, .	$4 50	
" " manure, seed, and planting, .	19 00	
" " hoeing, ...	6 00	
" " harvesting and husking, .	10 00	
" " interest on land, . . .	15 00	
		54 50
Net gain, ...		$85 30

Weighs 45½ lbs. to the bushel ears.
Gratuity, $3.

J. C. Parsons's Statement.

Gentlemen,—I wish to offer for premium the corn which I have raised the past season. The first lot contained one and a half acre. The land had been in grass and mowed for the last four years; it had annually received a top-dressing of compost, and produced about two tons of hay to the acre. There was spread upon this lot, about the first of May last, fifteen cords of stable manure, which was ploughed under. It was also well manured in the hill, with compost, and planted in hills three and a half feet apart each way. It was cultivated and hoed three times, and after the first hoeing it received a top-dressing of ashes, plaster and hen manure. It was cut up and stooked in the field. There were two rows of potatoes planted upon each end of the lot. The yield was 249 bushels

of ears, equal to 124½ bushels of shelled corn, or 83 bushels to the acre. Also, 15 bushels of potatoes on the one and a half acre.

I estimate the value of the crop and the expenses of cultivation, as follows:—

124½ bushels corn, at 80 cents, . . .	$99 60	
15 " potatoes, at 40 cents, . .	6 00	
Corn stalks, ...	20 00	
Pumpkins, ...	10 00	
		$135 60
Expenses of 15 cords manure, . . .	45 00	
" " compost, ...	5 00	
" " ashes, plaster and hen manure,	3 00	
" " cultivating and harvesting, .	20 00	
" " interest on land, . . .	9 00	
		82 00
Net profit, ...		$53 60

[Corn cost 44 4-10 per bushel.]

I would also offer for the second premium, the balance of my corn crop, which was raised upon seven acres. This land had been in grass for three years. It was manured with eight cords to the acre, and was cultivated in the same way as the first piece, with the exception that four acres was only hoed twice. The yield was 980 bushels of ears, equal to 490 bushels of shelled corn, or 70 bushels to the acre. Potatoes were also planted upon the ends of this lot, and the yield was 42 bushels. I think four acres of this lot would have yielded over 80 bushels to the acre; the balance of the lot was much injured by crows. The crop of pumpkins, however, was much larger upon this part of the field.

I estimate the value of crop and cost, as follows:—

490 bushels corn, at 80 cents, . . .	$392 00	
42 " potatoes, at 40 cents, . .	16 80	
Corn stalks, ...	70 00	
Pumpkins, ...	50 00	
		$528 80
Expenses of 56 cords manure, $3, . .	$168 00	
" " compost, ...	20 00	

Expenses of ashes, plaster and hen manure,	$13 00	
" " cultivating and harvesting, .	90 00	
" " rent of land, ...	42 00	
		$333 00
Net profit, ...		$195 80

I would add that all the manure, with the exception of plaster, was made upon the farm, and that there has been no "guess work" at the quantity of land or the yield of corn. My farm has been accurately surveyed and divided into lots, and the corn all measured by Mr. William Kelly.

Agawam, Nov. 26, 1852.

Corn cost 40 4-100 per bushel.
Gratuity, $3.

OATS.

Phineas Stedman's Statement.

The crop of oats which I offer for premium, was raised upon $1\frac{3}{4}$ acre of land, that had been pastured for several years previous to the spring of 1850, when it was ploughed, manured lightly, and planted with corn. In the spring of 1851 it was again manured and sowed with carrots. In the spring of 1852, oats were sowed, applying $3\frac{1}{2}$ bushels per acre. The above crop, when harvested, yielded 142 bushels, weighing 31 lbs. per bushel, giving 81 bushels, $4\frac{1}{2}$ quarts per acre, or, by weight, of 30 lbs. per bushel, $83\frac{5}{6}$ bushels.

Value of crop, at 50 cents per bushel, . .	$71 00	
" straw, ...	22 00	
		$93 00
Expenses for ploughing, ...	$2 19	
" " seed, ...	3 00	
" " sowing and harrowing, . .	2 00	
" " harvesting, ...	6 00	
" " threshing, ...	7 10	
" " rent of land, ...	15 25	
		35 54
Net gain, ...		$57 46

The directors award to Phineas Stedman, of Chicopee, the first premium, of $4.

Walter Cooley's Statement.

I offer for premium a crop of oats, which was raised on $1\frac{3}{4}$ acre of land. One year ago last spring I spread on, and ploughed in, nine cords of yard manure, and planted it with corn. Last spring, in April, I ploughed it once and sowed six bushels of oats, and harrowed them in. The product was 140 bushels, equal to 80 bushels per acre.

CR.

By value of crop, at 50 cents, . . .	$70 00	
" " straw, ...	24 00	
		$94 00

DR.

For Ploughing, ...	$2 00	
" Sowing and harrowing, ...	1 50	
" Six bushels oats for seed, . . .	3 00	
" Harvesting, ...	4 50	
" Threshing and cleaning, . .	6 80	
" Land rent, ...	15 00	
		32 80
Net gain, ...		$61 20

West Springfield, Nov. 30, 1852.

Awarded the second premium, of $2.

Root Crop.

J. P. Dickinson's Statement.

The crop of turnips which I offer for premium, was raised on 58 rods of ground. It was sowed with peas in the spring, at the same time I spread on four cords of manure. The first of August I sowed it with one-half pound of long smooth turnip seed, in drills 15 inches apart; they were hoed three times, and thinned to suitable distances. The 20th of November I gathered 298 bushels from the 58 rods.

CREDIT.

By value of the crop, at 15 cents, ...		$44 70

DEBIT.

To q'rter of manure, applied on previous crop,	$3 00	
" Ploughing, (which was very deep,) . .	50	
" half pound seed, ...	25	
" Sowing, ...	1 00	
" Hoeing and weeding, ...	5 00	
" Harvesting, ...	3 00	
" Use of land, ...	3 00	
		15 75
Net gain, ...		$28 95

Springfield, Nov. 30th, 1852.

Awarded first premium, of $2.

Milch Cows.

The report on milch cows, made to the directors of the Hampden County Agricultural Society, at their late fair, with the statements of exhibitors accompanying it, has been revised, and its important contents presented in the following abstract:

The committee to award premiums were J. W. Crooks, Edwin H. Ball, and Russell Ely.

The first premium, for five years old and upwards, was given to Carlton Thayer, of Chicopee. Mr. Thayer does not state the age of the cow, nor the manner of keeping her. In fact, the only inquiries of the society answered are as to the quantity of milk, which he states to have been "56 lbs. per day for the three last weeks of June, and 42 lbs. per day for the three last weeks in September." The cow calved the 27th day of last April.

The second and third premiums were given to Colonel D. Merrick, of West Springfield. Both cows are of the Ayrshire breed. One calved on the 20th of May, and the other in the first week of July. The first cow gave, from the 1st to the

20th of June, on an average, 49 lbs. of milk daily; from the 1st to the 20th of September, 36 lbs. per day. This cow has had a calf every year since she was two years old. In two of these years she was milked up to her calving every day; and the least she gave was five quarts. She was pastured only. The other cow gave, on an average, through July, 48 lbs.; in September, her average was 40 lbs.; her feed the same as the other cow.

Other particulars required by the society are not given.

The fourth and fifth premiums were awarded to Hervey Hills, of Springfield. The first is a mixture—Durham and native, six years old; calved April 16th. She averaged, for the ten days in June, a little over 45 lbs. of milk; and, during the same period in September, about 34¼ lbs. daily. Her feed has been grass only: her milk was sold for four and five cents per quart; owned by Mr. Hills three years. The other cow is a Durham, eleven years old; calved 15th of March. She averaged, for the ten days in June, about 46¼ lbs. of milk; and for the same period in July, about 31¼ lbs. daily. Her feed and sale of milk, same as the other; owned by Mr. Hills five years.

The first premium on heifers from two to five years old, was awarded to Hervey Hills, for a three year old Durham; calved May 16th. For the ten days in June she averaged 39 lbs. of milk. Her food has been grass only; milk sold for four and five cents a quart; owned by Mr. Hills from a calf.

The second premium was awarded to Nathaniel Howard, of Springfield; a native; two years and four months old; entered 1st day of May. For the ten days in June she gave ten quarts of milk per day; and for the ten in September, seven quarts per day. She has been kept in the barn, had some grass and some hay, and been fed three times a day with wheat shorts mixed with the slops of the house. Six quarts of milk have been sold daily at four cents; always owned by Mr. Howard.

The third premium was awarded to Tyler Childs, of Springfield.

A premium was awarded to J. Homer Demond, of Springfield, for a herd of thirteen cows, six of them natives, and seven partly native and partly Durham; their age varying from six to twelve; owned by Mr. Demond from six months to four

years. Two of them calved in October, 1851, one in November, and one in December, of the same year; one in January, 1852, one in February, three in March, two in April, one in July, and one in August, of the same year. From the 10th to the 20th of June inclusive, they averaged a fraction short of ten quarts daily; from the 10th of September to the 19th inclusive, they averaged a fraction over eight quarts daily, each cow. For the four months, June, July, August, and September, they gave 13,569 quarts, which were sold at four cents per quart. Their keeping consisted of rather short pasture; and they were fed daily with cut hay and three quarts of shorts mixed together, each. From July 1st to September 13th, they were fed with green corn, (stalks?) foddered twice a day. From the last date they were turned into fall feed, with one peck of cut pumpkins, each, without meal.

Two cows were offered for premium by Amos M. Carleton, of Chicopee Falls. The first is a native, ten years old, owned by him two years and four and a half months; calved August 7, 1852. The account of her milk is rendered for eleven days in June, 1851, and for eleven days in September, 1852. In the former period she gave a fraction short of nineteen quarts (47 pounds) daily; in the latter period, a fraction short of sixteen quarts (39$\frac{1}{3}$ pounds) daily. She was fed in June on good pasturage, five and a half pounds of wheat bran and oil meal daily; in September not so good pasturage, with one bushel of corn stalks cut up at night, and two quarts of common rye meal in the morning. The other cow was a Durham and Ayrshire, four years old, owned seven and a half months; calved January 27, 1852. She gave, in the eleven days in June, 12$\frac{1}{4}$ quarts daily; and in the eleven days in September, 9$\frac{1}{4}$ daily. Her food was a "rather poor pasturage," and in September she had, at night and morning, one bushel of corn stalks cut up. In September, 22 quarts of the milk of this cow gave cream, from which were churned 2$\frac{1}{4}$ lbs. of butter; and in February, (the 1st,) one day's milk, twelve quarts, gave one pound and nine ounces of butter. Her keeping was good hay and two quarts of scalded meal per day. The first cow gave, in September, from the cream of twenty quarts, two lbs. and fourteen ounces of butter.

Two cows were offered by Michael Dorne, one of which

gave 36 lbs. of milk daily for nearly six months, (from seven to eight pounds of butter weekly;) the other, since March, has given from eighteen to twenty pounds of milk daily, making four to five pounds of butter, weekly; this is a younger cow than the first.

[See premiums in the following list.]

PREMIUMS AWARDED.

[In the absence of reports from many of the committees, the following list of premiums awarded, is here inserted, as showing the general operations of the society.]

Bulls and Bull Calves—1 *year old and upwards.*

2. D. Brainard Merrick, ... $4 00

From 1 *to* 3 *years old.*

1. Tyler Childs, ... 4 00
2. Laban Button, ... 3 00
3. William Pynchon, ... 2 00

Under 1 *year old.*

1. Phineas Stedman, ... 3 00
2. William Pynchon, ... 2 00
3. Edward Parsons, ... 1 00

Milch Cows—5 *years old and upwards.*

1. Carleton M. Thayer, ... 6 00
2. Col. Merrick, ... 5 00
3. Col. Merrick, ... 4 00
4. Hervey Hills, ... 3 00
5. Hervey Hills, ... 2 00

For Heifers—from 2 *to* 5 *years old.*

1. Hervey Hills, ... 5 00
2. Nathaniel Howard, ... 4.00
3. Tyler Childs, ... 3 00

For a herd of 13 cows, the gratuity of a silver cup, offered by Mr. Francis Brewer, to T. H. Demond.

Heifers and Heifer Calves—2 *years old and under.*

1. James M. Goodwin, ... 3 00

2. Sumner Chapin,	$2 00
3. Lyman Brown,	1 00

1 year old.

1. Wm. G. Bates,	3 00
2. H. Bartholamy,	2 00
3. Leonard Converse,	1 00

Heifer Calves.

1. S. F. Merrick,	3 00
2. John Chase,	2 00
3. Hervey Hills,	1 00

Oxen—6 years and upwards.

1. George Ensworth,	6 00
2. Charles McIntosh,	5 00
3. Hezekiah Pease,	4 00
4. Hervey Smith,	3 00
5. Hervey Foster,	2 00
6. R. W. Bemis,	1 00
Gratuity to D. S. Atchinson,	1 00

Oxen—5 years old.

1. Lyman Brown,	6 00
2. William Pynchon,	5 00
3. James L. S. Wesson,	4 00
4. Simeon Ashley,	3 00
5. Orrin Cadwell,	2 00
6. Jonathan W. Freeland,	1 00

Oxen—4 years old.

1. H. J. Chapin,	5 00
2. Sylvester Chapin,	4 00
3. Simeon Ashley,	3 00
4. Warren Frost,	2 00
5. Sylvester Cooley,	1 00

Steers—3 years old and under.

1. Sumner Chapin,	5 00
2. Linus Dickinson,	4 00
3. Leonard Converse,	3 00
4. Roderick S. Merrick,	2 00
5. L. B. Chapin,	1 00

Steers—2 years old.

1. Roderick S. Merrick,	$4 00
2. Lyman Brown,	3 00
3. William Pynchon,	2 00
4. Joel M. Lyman,	1 00

Steers—1 year old.

1. James M. Coomes,	3 00
2. Lyman Brown,	2 00
3. Warren Frost,	1 00

Fat Cattle—for Slaughter.

1. George Taylor,	8 00
2. C. Fowler,	7 00
3. Seth Bush,	6 00
4. D. Monson, Jr.,	5 00
5. Luke Bush,	4 00
6. Seth Bush,	3 00

Single Ox.

1. E. Ashley,	4 00

Fat Cattle—for the Stall.

1. George Layton,	6 00
2. Seth Bush,	5 00
3. Charles Fowler,	4 00
4. Daniel Monson,	3 00

Town Teams.

1. Longmeadow,	12 00
2. Westfield,	9 00
3. West Springfield,	6 00
4. Springfield,	5 00
5. Wilbraham,	4 00

Swine—Boars.

1. J. L. Briggs,	5 00
2. Amos M. Carlton,	4 00
3. Orrin Cadwell,	3 00
4. Daniel L. Atchinson,	2 00

Breeding Sows.

1. Horace Clark,	5 00
2. Miner Hitchcock,	4 00

3. Jonathan Carlisle, ... $3 00
4. Amos M. Carlton, ... 2 00
5. J. L. Briggs, ... 1 00

Litter of Pigs.

1. Daniel Merrick, ... 4 00

Fat Hogs.

1. Horace Clarke, ... 3 00

Sheep—Long Wool Bucks.

1. Horace Pease, ... 3 00
2. Pliny Merrick, ... 2 00
3. Daniel L. Atchinson, ... 1 00

Long Wool Ewes.

1. Horace Pease, ... 3 00
2. Pliny Merrick, ... 2 00
3. Pliny Merrick, ... 1 00

Short Wool Bucks.

1. Pliny Merrick, ... 3 00

Short Wool Ewes.

S. S. Merrick, a diploma.

South Down Bucks.

Hervey Smith, a diploma.

South Down Ewes.

Hervey Smith, a gratuity, ... 1 00

Horses—Geldings.

1. J. L. Briggs, ... 3 00
2. William Pynchon, ... 2 00
3. George F. Ramsdell, ... 1 00

Gratuity to D. J. Bartlett, ... 1 00

Gratuity to George A. Kibbe, ... 1 00

Studs.

1. Jacob Steover, ... 5 00
2. Amos M. Carlton, ... 3 00

Gratuity to B. S. Brocket, ... 2 00

Farm Horses.

1. Richard Bagg, Jr.,	$5 00
2. James M. Coomes,	4 00
3. George Ensworth,	3 00
4. Eliphalet Trask,	2 00
5. James T. Ames,	1 00
Gratuity to F. H. Moseley, upon a pair of horses, not entered,	1 00

Diplomas awarded by the Directors.—F. H. Moseley, R. W. Bemis, Geo. Ensworth, Samuel Warner.

Carriage Horses, in Pairs.

1. Chester W. Chapin,	4 00
2. J. S. Robbinson,	3 00
3. John McCray,	2 00

Breeding Mares.

1. Abel Cooley,	4 00
2. Gideon Phillips' estate,	3 00
3. Lyman Phelps,	2 00
4. Oliver Hawks,	1 00

Colts—1 *year old.*

1. Horace Pease,	2 00
2. Robert W. Bemis,	1 00

Colts—2 *years old.*

1. Nathan P. Bartholomew,	3 00
2. Ethan McIntosh,	2 00
3. Silas Root,	1 00

Colts—3 *years old.*

1. H. A. Dennison,	2 00
2. M. F. Moore,	1 00
3. L. D. Fowler,	50

Fowls.

1. John F. Wood, White Dorkings,	1 00
2. George Walker, " "	50
1. George Stoddard, White Shanghaes,	1 00
2. George C. Dunham, " "	50

1. George Stoddard, Black Java Pheasant Game, .	$1 00
2. George Stoddard, White Pheasant Game, . .	50
1. Marcus F. Moore, Chittagongs, ...	1 00
2. William Bodurtha, "	50
1. Drayton Perkins, Black Spanish, ...	1 00
2. R. Bliss, " "	50
A gratuity to D. Brainard Merrick, for 6 white turkeys,	50

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FRANKLIN COUNTY AGRICULTURAL SOCIETY.

Ploughing.

The Plough, the Loom, and the Forge, are representatives of the three grand useful arts of life, that feed, clothe, and shelter mankind; that form the basis of all our domestic economy, the foundation upon which has been erected, through the stages of continual progress, the grand, brilliant, and enduring superstructure of our glorious modern civilization. What the key-stone is to the arch, what the corner-stone is to the temple, is the humble, ungainly and earth-begrimed plough—in the eyes of the ignorant and uninitiated so insignificant and contemptible—to the blessed and beautiful culture that is transporting the solitary place and the wilderness into a beautiful garden, and bringing back to earth the ancient Eden. Not a single grain waves its banner of living green in the breeze, or fills out its little granary of ears with rich store of nutriment for man; not a tree bends down with its blushing, golden fruit, replete with precious nectarean juices, sweeter than the food of Olympian deities; not a flower unveils its starry eyes to the sunshine, or rose perfumes the breath of the gale from its fragrant chalices,—that may not owe a richer value, a greater worth, a higher grace, a sweeter, diviner loveliness, to that instrument of too often little valued labor, there in the dark and humble furrow, through whose prowess the chaos of the outward world is being gradually brought into a grateful and blessed order, and the rugged old earth smoothed and softened into a smiling, bounteous garden, a paradise of beauty and delight for man. It is the fertile produce of the plough that feeds the fresh comeliness of blooming youth, that sustains the stout sinews and stalwart

strength of manhood, that nourishes the rounded form, the brilliant and enchanting loveliness of blessed woman. It is the fruits of the plough which load the white winged broods of busy commerce that cover the seas, and furnish the raw material for the myriad flying fingers of steel and iron, that ply their tasks in the great manufactories, while they give nourishment to the thousands upon thousands of industrious operatives.

All honor, then, to the plough; and fit it is, that the monarch of the mighty agricultural land of the Orient, that feeds the most crowded population on the face of the earth, should annually drive the ploughshare in the presence of his people, and that the great, free, intelligent States of the western world should hold their yearly fairs, to glorify the plough, and celebrate the humane and bloodless triumphs of this noblest of the useful arts, the great foundation art of agriculture. Thus grand and impartial is the office of the plough, and hence our agricultural societies have instituted ploughing matches and premiums to encourage and aid, as far as lay in their power, all progress in tillage, and improvement in the ploughman's labors, —every advancement in the thorough culture of the soil. And your committee believe that in the department of the plough and ploughing, the following essential elements are to be taken into consideration:—

First, The depth to which the soil must be moved and stirred.

Secondly, The thorough disintegration, or breaking up of the earth.

Thirdly, The diminution of pressure on the ploughshare, and hence of draft, and the consequent lightening of labor for man and for beast; and the lay of the furrow.

The rules and regulations of the society name seven inches as the depth required. Your committee, however, beg leave respectfully to suggest, that they regard this ultimatum of depth as far too shallow for any thorough tillage and proper culture of the soil, in any and every place where the plough can be driven deeper. There doubtless may be, here and there, tracts of rocky land, where the ledge crops out, or lies very near the surface, where deep ploughing may be an impossibility; but the more these rocks are exposed by the ploughshare to the action of sun and air, the more quickly will they

be disintegrated, slacked or decomposed, and the valuable mineral manures they contain rendered available and made a part of the soil. In this way, as all the agriculturists in the mountain districts are aware, well worn and apparently exhausted soils, if allowed to remain fallow a short time, become as strong and good as new. And we believe we may say that every thorough scientific farmer, the country over, will agree with us, that deep ploughing, in all soils, cannot be too highly recommended, or too strongly urged, if we would increase by a large per centage the amount of our crops.

A few brief considerations will show the reason for this opinion.

In the first place, deep ploughing allows the air to percolate through the soil, and thus play its part in the nourishment of the roots of plants, in the decomposition of the various earths, and the deposition of moisture.

Secondly, deep ploughing carries the manures down further into the earth, exposes more soil to the action of the atmosphere and sun-light, and allows the roots to penetrate more deeply and have more room in which to grow.

Thirdly, a deep furrow covers up the manures that have been spread over the surface, and thus retains the nutritious and volatile elements, that otherwise would escape into the air, and be lost.

Fourthly, by deep and thorough tillage, all lands, of whatever description of soil, are enabled to endure and to defy the periodical droughts, that form a peculiar feature of our New England climate. There has been a theory in times past, and a very plausible and specious theory it was, that in light soils, on a gravelly or sandy subsoil, the goodness of the manures would be lost by deep ploughing, or rendered unavailable, as they must necessarily leach or filter away through the gravelly or sandy substratum. Any one, however, who has passed impure, turbid, or even offensive water through a common filter, will find that even a few inches of earth suffice to remove the color and the odor from the water, and render it pure and limpid; and that, as the juices of the manure pass from the surface down into the ground, the earth speedily absorbs all the useful and nutritious salts, and that there is infinitely more danger of the goodness of the manure being evaporated from

too shallow ploughing, than of its being filtered away and lost by being buried too deep. Another consideration will serve to show the value of deep ploughing to defend the growing crops from the droughts. In the dryest and hottest weather, the air contains a large amount of moisture, that is condensed in drops upon all bodies and substances of a lower temperature than the atmosphere itself, as the pitchers and glasses on our table show, as well as the bricks and stones of our pavements, and the leaves and flowers glistening in their morning coronets of flashing dew-drops. In this way, in time of drought, every particle of sand and earth receives and drinks in moisture from the air, especially when the night has reduced their temperature; and it is thus obvious that the deeper the air is allowed to enter freely, the greater will be the amount of moisture absorbed; and thus in severe and long protracted droughts, the light sandy soils suffer less than the more heavy and clayey, which bake hard and refuse to allow the air to percolate through the pores, and thus carry to the suffering and thirsty roots the refreshment which they need.

Especially, if the subsoil be *hard-pan*, to give proper drainage and to allow the roots to penetrate, deep ploughing, in the opinion of your committee, is the *sine qua non*.

In a stiff, heavy soil of clay or clayey loam, we believe no one at the present day will have the hardihood to recommend light tillage, for the only possibility of thorough culture depends on the complete draining and the lightening up of the soil by ploughing deep. Let every farmer among us who doubts, try the experiment, by ploughing contiguous lands of like lay and character, one shallow and one deep, and let the difference in their crops the coming year control his decision, and we shall have no fears of his disagreeing with the views of the committee. And we believe that the great body of observing and reflecting farmers, all over the land, are ready now to give a hearty response to our recommendation of deep ploughing. In the matter of the thorough disintegration, or breaking up of the soil into particles—the great aim of all ploughing and cultivating—your committee cannot but feel it to be their duty to recommend the double plough, or *improved* Michigan,*

* Mathematical straight line plough, Knox's invention. The inclined planes of the ploughshare graduated with such mathematical precision as to make the pressure on all parts equal, and diminish the draft.

which, while it leaves no ridge of turf unbroken, or merely crowded aside, as with the old Michigan, so beautifully breaks up and pulverizes the surface as hardly to require the after services of the harrow, and renders it almost fit and ready, without further action, to receive the seed; and the committee were also glad to observe that the double plough could be worked with one team in about the same time as the common single plough; and we urge it upon every farmer to avail himself of the improved facilities thus offered him in the breaking up of new lands.

The diminution of pressure upon the ploughshare, and the consequent ease of draft, by which the labor of man and beast is much lessened, is an important point to be taken into consideration in the manufacture of ploughs; and a grand improvement is claimed in this respect by the patentees of a new instrument* employed on the present occasion, which, if real, is deserving of especial notice and commendation; but, owing to a *change* in regard to the proviso of "owning the ploughs employed thirty days previous to the exhibition," made within a few days, a number of members were prevented from entering their teams, and hence there was too little competition—all the ploughs, save one, being of the same kind—for the committee to judge fairly of the superiority of the plough employed, if any, over the other patterns.

In giving their award of premiums, the committee had less field of action and room for choice, on account of the unusually small number (for the reason mentioned above) of entries. The society's prescribed depth of seven inches was not in all cases come up to, and the committee, on that account, are obliged to withhold a greater expression of satisfaction from teams that did their work quickly and laid their land well. Yet, all farmers know that it is far easier to lay a light, shallow furrow handsomely than it is a deep one, when there is only an inch or two of difference, as well as to do the work more speedily. The land selected was unfortunately not entirely level, nor homogeneous, being in some parts heavy and moist. Certain lots were of a light loamy texture and of easier tillage than the rest,—facts considered by the committee in

* See Note on preceding page.

making up their judgment. The ease and facility with which teams may work, and the beauty of the cattle, however delightful to behold, are not elements that come into the estimation and decision of the committee, but only the depth, completeness and excellency of the result.

All which is respectfully submitted, for the committee, by

JAMES RICHARDSON, Jr., *Chairman.*

James Newton, Greenfield,	1st premium, . .	$6 00
Charles Jones, Deerfield,	2d " . .	5 00
Albert Smead, Greenfield,	3d " . .	4 00
Solomon Hawks, Shelburne,	4th " . .	3 00
Edward A. Robbins,	5th " . .	2 00

Michigan Plough.

A. C. Whelock, Greenfield,	1st and 2d premium, .	5 00

GRAIN AND ROOT CROP.

The committee on grain and root culture, have considered the various statements which have been submitted to them, and recommend the following premiums and gratuities:—

Indian Corn.

1. Moses Stebbins, Deerfield, ...	$5 00
2. Asahel Wright, "	3 00

Wheat.

1. William E. Bardwell, Shelburne, ...	5 00
2. E. E. Robinson, Sunderland, ...	3 00
3. Thomas Greenough, Deerfield, ...	1 00
Lafayette Anderson, Shelburne, (gratuity,) . .	1 00

The amount of land improved by Mr. Anderson did not come up to the limit prescribed by the society, but it would otherwise have been entitled to one of the regular premiums.

Rye.

E. E. Robinson, Sunderland, ...	$5 00

Carrots.

Dr. Lucius Cook, Wendell, ... $2 00
Aaron Buddington, Leyden, (gratuity,) . . . 1 00

Mr. Oliver Williams, of Sunderland, entered a lot of 28 rods, which produced 219½ bushels, or 1,300 bushels to the acre, but the committee did not feel themselves at liberty to give a premium for the product of a piece of land so much smaller than the rules of the society prescribe.

Turnips.

Frank Mather, Greenfield, ... $2 00

Onions.

Elihu Belden, East Whately, ... 2 00

Joseph Smith, *Chairman.*

Greenfield, Dec. 8, 1852.

Moses Stebbins's Statement.

The corn which I entered for premium was raised on land planted to corn in 1851. In 1851 spread 25 loads of manure to the acre, with 200 lbs. plaster, and ploughed in; rolled the land well, harrowed it fine, and planted to corn; the product being about 86 bushels per acre.

In May, 1852, I ploughed the land seven inches deep, then subsoiled six inches deeper; then rolled well, carted on 25 loads green manure, and spread on the furrow with 200 lbs. plaster, and harrowed thoroughly; planted with twelve-rowed Canada corn three feet by three feet each way, and hoed four times.

In October we harvested 240 bushels of ears of corn. I have not shelled it yet, not considering it yet in a merchantable state.

From one square rod of ground we harvested and shelled, as it came from the stalks, 34 quarts of corn.

South Deerfield, Nov. 17, 1852.

Asahel Wright's Statement.

I took 300 rods of pine plain land, the soil a sandy loam, and divided it into four ridges, or lands; it was ploughed

about the 10th of May to the depth of seven inches, and subsoiled eight inches, making in all fifteen inches in depth. I subsoiled Nos. 1 and 3 of the ridges. I planted it the 17th of May with yellow corn, called the Clapp corn. It was manured in the hill with a compost manure, made of muck and stable manure, equal parts, at the rate of eight loads or four loads per acre, with the addition of one-half peck of plaster Paris to a load. I cut up the corn and shocked it the 11th of September, and made four rows of stocks. In Nos. 1 and 3 I harvested 74¼ bushels of ears; Nos. 2 and 4, I harvested 64 bushels of ears. I took four bushels of ears and dried them and shelled it, and had one bushel 26½ quarts.

I could perceive no essential difference in the growth of the corn, until the drought commenced, and then there was a marked difference; that which was subsoiled kept green during the season, and the other, the leaves rolled and turned yellow.

The above corn was hoed three times.

Deerfield, Nov. 18, 1852.

William E. Bardwell's Statement.

Wheat offered for premium by William E. Bardwell; quantity of land, one acre and two rods. The land, previous to 1851,—broke up in 1849, planted to corn, with about 25 loads of manure; in 1850 sowed to wheat, no manure; in 1851 planted to corn, with 23 loads of manure, 35 bushels to a load, one-half swamp muck, one-half stable manure. Quantity of corn about 70 bushels. In 1852 sowed to wheat, ploughed 3d of May, sowed the 4th with two bushels of wheat; wheat soaked 24 hours in weak lye, then rolled in lime; harvested the 12th and 13th of August; threshed in September. Quantity of wheat, 35 bushels 7 quarts.

EXPENSE.

Ploughing, sowing, harvesting, five days, . . .	$5 00
Threshing, ...	2 00
Two bushels of wheat at $1 33, ...	2 67
	$9 67

35 bushels 7 quarts, at $1 33 per bushel, . . .	$46 96
One ton of straw, ...	4 00
	$50 96
Deduct expense of labor and seed, . . .	9 67
Leaves a profit of	$41 29

Shelburne, Nov. 15, 1852.

E. E. Robinson's Statement.

This land that I sowed to wheat was old plain land. It was considered very poor. My mode of cultivating this land, six years past, has been as follows: the first year was to plough in about twenty loads of swamp muck per acre, and about twelve loads of compost manure in the hill, one-half of it was stable manure and the other half was swamp muck; planted broom-corn; and when I cut the corn in the fall I ploughed the stalks in, and sowed it to rye; and in the spring following I sowed on clover and harrowed it in, and the next year I cut it over, but it was not worth gathering; my reason for doing so was to have the clover roots grow; and the next year I commenced the same rotation as above stated. I sowed my wheat about the 10th of September. I sowed two bushels per acre; and in the spring I sowed on about 20 bushels of ashes per acre on my wheat, and the crop of wheat was 27 bushels per acre. The wheat that I sowed was the white flint bearded wheat.

The land that I sowed to rye was old plain land, very poor indeed. I went through the same rotation as above stated, except the ashes. I did not sow any on. My rye I sowed about the 1st of October. I sowed one bushel per acre. The crop of rye was 18 bushels per acre. The rye that I sowed was the white rye.

My mode of ploughing this land has been from seven to eight inches in depth.

Sunderland, Sept. 21, 1852.

Thomas Greenough's Statement.

We present for your consideration a crop of winter wheat, raised on Fort Hill, in Deerfield, on a field containing 168 rods

of land. The soil is a light loam. Previous to 1849 said lot had been used for a rye field, and occasionally a crop of corn. The rye was generally of good quality. The yield, from six to twelve bushels per acre. When corn was planted some ashes were used, otherwise no manure was applied. Subsequently the crops have been as follows:—

1849, Indian corn; 20 loads of manure from the yard spread to the acre.

1850, winter grain; clover sown in the spring.

1851, clover; the first crop mowed; the second crop, which was an average one, was harrowed down and ploughed in about the middle of August. About the 20th of September two bushels of wheat per acre was sown.

The present season (1852) the wheat was harvested. We obtained from this field 27½ bushels of excellent quality. The white flint was the kind sown.

It will be remembered that no manure of any consequence has been applied to the above field for a series of years, with the exception of the year 1849, and that the soil is of ordinary quality.

Deerfield, Sept. 28, 1852.

Lafayette Anderson's Statement.

I would say to the committee, that when I entered this piece of wheat for premium, it had not been measured; I thought, however, there was at least an acre, but upon measuring it there was but 151 rods; so that, according to the rules of the society, it cannot draw a premium, even if superior. I will, however, present the following statement:—

In 1851 it was planted with corn. Manner of cultivation in 1851: I spread 24 loads of stable manure upon the sward and ploughed it in, then applied a top-dressing of 35 loads of the same kind of manure, and gave it a thorough harrowing; put a mixture of plaster, ashes and hen manure in the hill, planted three feet apart each way. Yield, 125 bushels shelled corn. In the spring of 1852 I dug up the old corn stubs, harrowed the land well with a heavy harrow before sowing, but did not plough. Used no manure this year. Sowed two bushels of wheat (do not know the kind) the last of April; harvested in

September; threshed in October. Yield, 32½ bushels, or about 34½ bushels to the acre.

EXPENSES.

Two bushels wheat at $1 25 per bushel, . . .	$2 50
Labor, preparing land and sowing, self and team, three days each, ...	6 00
Harvesting and threshing, ...	7 00
Total expenses, ...	$15 50
Value of crop, 32½ bushels wheat, at $1 25 per bush.,	$40 62
Two tons of straw, at $5 per ton, ...	10 00
Total value of crop, ...	$50 62
Total expenses, ...	15 50
Leaving a balance in favor of crop of . . .	$35 12

Lucius Cooke's Statement.

The subscriber, a member of the Franklin County Agricultural Society, submits the following statements relative to the cultivation of a patch of carrots raised by him the current year.

Said carrots were raised on Wendell Hill, in said county, on the place whereon said applicant now lives. The exact quantity of land was three-fourths of an acre, and the number of bushels, or baskets, six hundred and fifty-one; and the number of tons, sixteen. This number of tons was ascertained by weighing four or five loads on the hay scales, as they were drawn from the field, and dividing the sum of their weight by the number of bushels, or baskets, and finding them to average fifty pounds.

The land on which these carrots were raised, had been mowed for eight years prior to 1850, when it was planted with potatoes, nearly all of which were destroyed by the disease, and were not worth half the cost of harvesting.

In 1851 the land was planted to corn, which was much damaged by worms, and afterwards set out to ruta bagas, which grew well, and yielded a fine crop, but having no animals that would eat them, except horses, they were kept through

the winter in a cellar, and then thrown out for manure—the entire crops on the land not paying the expense of cultivation, by one-half. On or about the 20th of May, 1852, the land was sowed in drills, eighteen inches apart, to carrots, by a machine bought of Mr. Wm. Elliot, for the sum of three dollars and twenty-five cents, the land being first prepared by deep ploughing with a common plough, then raked and levelled—about thirty loads of horse manure being spread on the land before ploughing. The labor of preparing the land, sowing the seeds, cultivating and harvesting the crop, I contracted for at the commencement, for the sum of seventy-five dollars, which seemed to me and others as an extravagant price, but as some stone were to be removed in the job, I consoled myself with the belief that I might stand it "just this once." The crop has just been harvested.

As to the value of the carrots, I have always believed them worth as much as oats, by the bushel, to feed to horses, which are the only animals I keep. Four or five tons of them I have sold at from $12 to $15 per ton; at $12 I could sell them all, any day, and the sum would amount to $192. Add to this, four dollars, a sum for which I sold the tops as they lay in the field, and four more dollars, which I hope to get as premium, and the sum would amount to $200. Deduct from this, $75, paid for labor, and $25 more, for the cost of seed and my own care and skill—the last being a charge I make from habit—and it will leave $100 as the net income from the three-fourths of an acre.

Wendell, Nov. 15, 1852.

Aaron O. Buddington's Statement.

The land upon which I raised my crop of carrots this season, was in a high state of cultivation, having had carrots on it three, and part of it five, years in succession, with an increase of crop each year, it being manured at the rate of thirty cart loads per year, for the last three years. The soil is a deep loam, free from any excess of water, and resting on hard pan. I manured it this year, at the rate of thirty loads to the acre, of barnyard manure. My mode of cultivation is as follows:

To spread the manure evenly before ploughing, then commence with a side-hill plough on one side, ploughing beam deep a strip about one rod wide, then rake off the stones and whatever else I wish, into the furrow, then plough another strip, and so proceed until done. Sow, with seed-sower, eighteen inches to two feet, between the rows, and thin them out, the second time hoeing, so as to leave them from eight to ten inches in the row. I sow at the rate of three pounds of seed to the acre, it being less work to weed them when small than where they are scattering, for you can, if you have them thick, cut them out with the hoe, leaving two or three in a place, which is much less work for the fingers, than where you have to watch for fear of losing one. Weed and hoe often enough to keep thoroughly clean from weeds, not letting any go to seed. In this way I find less work in raising a crop of carrots on the same ground, each succeeding year.

Fifteen loads of manure, ...	$15 00
Four days ploughing and sowing, ...	4 00
Twelve days hoeing and weeding, ...	12 00
Ten days harvesting, ...	10 00
One and three-quarters pound of seed, . . .	1 75
Use of land—ninety-eight rods, ...	4 00
	$46 75
Four hundred and forty bushels, at 25 cents, .	110 19
Profit, ...	$63 44

Crop raised, 440 bushels; weighed, 50 lbs. to the bushel, 40 bushels of the above crop.

Leyden, Nov. 13, 1852.

Oliver Williams's Statement.

I submit the following statement of the produce of twenty-eight rods of ground, sown to carrots the past season. The land on which they grew is naturally moist, with a clayey subsoil; the condition good; grew corn on the same in 1851, spreading twenty loads long manure to the acre. The land has been manured this year the same, and ploughed under, to

the depth of seven inches. The growth of the crop I attribute to the thorough pulverization of the soil, which was accomplished at the time of sowing, by the use of one of Woodworth's Planters, in sowing the seed, which implement I consider preferable to the rake. Sowed in drills, eighteen inches apart, per row.

1852.	CARROT FIELD.	Dr.
May 14,	Five loads long manure,	$5 00
" 20,	Carting and spreading same,	75
" 22,	Team ploughing and harrowing,	75
June 6,	Sowing seed with machine,	25
" 6,	Seed, three ounces,	20
" 18,	Weeding and thinning,	1 00
July 8,	Ploughing between rows,	25
Aug. 15,	Ploughing between rows,	25
Nov. 8,	Digging, topping and drawing,	2 00
Interest on land, at $2 per acre,		2 00
		$12 45

1852.	CARROT FIELD.	Cr.
Nov. 10,	219½ bushels carrots, at 30 cents,	$65 85
	Expense brought forward,	12 45
	Profit,	$53 40

The weight of carrots, per bushel, fifty-five pounds.

SUNDERLAND, Nov. 15, 1852.

F. Mather's Statement.

The crop which I propose to offer for premium, is one-half acre turnips, known in this region as the Michigan Turnip. Last year the land on which they were raised was planted with corn, using about thirty loads of manure per acre; this year no manure was used. It was planted about the 12th of May, with a seed planter, in rows, two and a half feet apart, the plants standing twelve or fifteen inches apart, after transplanting. They were hoed three times; harvested the first week in November, producing four hundred and five bushels.

Expense of raising said Crop.

Ploughing,	$0 75
Planting,	25
Thinning and transplanting,	2 00
Hoeing, three times,	3 00
Harvesting,	4 00
Rent of land,	6 00
Total,	$16 00

Greenfield, Nov. 20, 1852.

Elihu Belden's Statement.

As it is required of me that I should give you an exact statement concerning the condition of the land, and the manner in which I cultivated my onions, offered for premium, I will state as follows:

The land on which I had my onions was planted with broom-corn last year. I ploughed in clover, and put on about ten loads of manure per acre, which yielded about eight hundred pounds per acre. This year I burned the stalks, and raked off the stubs. After ploughing, I had the soil well pulverized, by harrowing, and rolling in ten loads of manure. I drilled in the onion seed with my corn planter. After the second weeding I applied eighty pounds of improved superphosphate of lime. The one-fourth of an acre yielded ninety bushels of onions.

East Whately, Oct. 20, 1852.

Sheep.

A patron of your society, at a table talk two years ago, by a slip of the tongue, gave us the following axiom, viz.: "That he who made *one* blade of grass grow where two grew before, was a public benefactor." The speaker that followed, play-

fully responded, that he presumed his friend who preceded him meant to encourage the cultivation of very large blades of grass. Your committee will not undertake to judge of the correctness of this philosophy when applied to grass, but they would be ready to maintain that one animal may often be made to grow where two grew before, to the great advantage of the farmer, and particularly so to those who are directing their attention to the raising of sheep.

There was a fine illustration of the above principle in the exhibition of sheep, which, though few in number, were of a very superior quality; each in their different variety speaking well of the husbandry of their owners. No. 1 was a lot of South Down Ewes, owned by Samuel Fisk, of Shelburne, (who seems to be a sort of Jacob, of Scriptural notoriety, in every thing he turns his hand to,) three-fourths blooded, six in number, each of which had brought up a pair of lambs the past summer, and weighed as follows, viz.: two of them 134 lbs. each, one 140 lbs., one 154 lbs., and two of them 164 lbs. each. The lambs were sold the past season, at four months old, for $6 40 a pair; add to this 3½ lbs. wool, at 34c. per lb., $1 19, makes the product to each ewe $7 59 per annum.

It appears by a written statement of this modern Jacob, handed your committee, that the six ewes exhibited have raised in the three last years 36 lambs, which have been sold when 4 months old for the sum of $110 40; to which add $21 42, the value of the wool, makes $131 82, as the income from six ewes for three consecutive years, or $21 97 to each.

A few years since wool was one of the staple productions of Franklin county, but the free pasturage of the western prairies, speckled over with vast flocks of sheep, the wool from which can be transported hither for a penny a pound, has well nigh driven the fine wooled sheep from our mountain farms. But while this has been going on, the increased population of our manufacturing villages and the growth of our cities has opened a market for mutton and lambs, for the supply of which our nearness to market gives us advantages against which no western farmer can compete.

During the past winter a farmer of Conway has sold a pair of sheep in the Boston market, for mutton, for one hundred dollars.

Another farmer of the county, who is giving his attention to raising early lambs, sold his entire lot of 62 for the sum of $300, or $4 82 cents per head.

The fine grasses of the Connecticut Valley, as also the small farms of the mountain slopes, that shed their waters into this beautiful river, are peculiarly adapted to this species of husbandry. Small flocks, and the nicest of care, are the only requisites for success. Neither is there any danger of exceeding the demand; and the committee would hope that the statistics herewith presented will awaken an attention to this subject, the result of which will be at our succeeding fairs, the exhibition of a vastly increased number of specimens of sheep for the shambles.

All which is submitted.

G. Dickinson, *Chairman.*

First, second, and third premiums were awarded to Aaron Buddington, of Leyden, for merino sheep.

Fat Cattle.

The four yoke of oxen from Shelburne were fine animals, fully sustaining the reputation which that town has acquired for its highly improved farm stock. The average weight of the eight oxen was 2,002 lbs. per head.

The six year old steers, owned by Mr. Arms, to whom the first premium is awarded, are deserving of all praise. Reared as they have been from calves, with little extra feed, till within the last four months, they form an exception to the ordinary growth of neat stock. Their weight is 5,555 lbs. Mr. Arms has furnished your committee with substantially the following statement:—

"When calves, were fed the first three months with skimmed milk, with a little meal, ground from a mixture of three parts oats to two of rye and one of corn; at three months old were turned to pasture till winter. From that time to June last they consumed, in all, about 15 bushels of meal, which was fed mostly to them during spring work. They were broke when two years old, and worked regularly on the farm till July, 1851.

From June last to this date, September 29, they have been fed with meal twice a day, and have consumed in all 85 bushels of provender, mostly corn and oats, the mixture worth 4*s.* per bushel, total value, $56 66. They have never been over-fed, always leaving a clean manger. They were six years old last March; are seven-eighths Durham; were both sired by the celebrated Deerfield bull, known as the Childs' bull, and owned by Samuel Childs, Esq."

Those who have known them from calves, and who know Mr. Arms's management of stock, impute something of their extraordinary growth to the wholesome and systematic feeding, and the regular working of cattle, for which Mr. A. is distinguished. Although now very fat, for aught that appears, they may continue to increase in size and fatness for a long time to come.

Per order of the committee,

AUSTIN RICE, *Chairman.*

Consider Arms, Conway,	1st	premium,	. . .	$8 00
Joseph Anderson, Shelburne,	2d	premium,	. .	7 00
Solomon Smead, "	3d	"	. . .	6 00
Joseph Anderson, "	4th	"	. . .	5 00
Joseph Anderson, "	5th	"	. . .	4 00
Dennis Lee, Conway,	6th	"	. . .	3 00
Abijah Stearns, "	7th	"	. . .	2 00

TOWN TEAMS.

Two teams only were presented. Their general appearance was fine, and gave evidence of good taste and enterprising ambition from their owners in raising stock, as most of them were well matched, both in form and color, and in good thrift.

Shelburne team numbered 88 head. This team was too long for the lot, (or rather the lot was too short for the team,) and they were arranged on a curved line. We noticed the weight of five pairs of steers, four years old, averaging 3,550 lbs.; also one pair of five years, weight 4,235; all of good quality and well matched.

Conway team numbered 46 head. This team also had some superior pairs of four years old steers; three pairs, average weight 3,670, and well matched. But we must speak of a pair of calves on the lead of this team, owned by C. Arms, weight 5,555 pounds, which your committee think cannot be beaten in this State or in any other, as to beauty, if in size. Verily, they would make fine leaders to the World's Fair.

All which is respectfully submitted.

R. H. Leavitt, *Chairman.*

Shelburne, 1st premium, ...	$15 00
Conway, 2d "	10 00

Fowls.

The first premium is awarded to Mr. G. B. Alverson, of Greenfield, for the best lot of Black Spanish fowls; better specimens are rarely seen in any poultry yard—good layers, fine meated, and fine cooking fowls.

The second premium is awarded to Mr. Wm. A. Howland, of Conway, for two lots, composed of a mixture of Shanghae and other large breeds. They were all very fat, healthy, fine looking fowls of the kind, but the committee do not consider this kind of fowls so good as that entered by Mr. Alverson, and it was this consideration mainly which determined the premiums. The committee are of opinion that the Shanghae and other large breeds of hens are not on the whole so desirable or profitable as the smaller breeds. Had we been governed by the number and size of the fowls exhibited, and the interest and system manifested in fowl raising, we should probably have awarded the first premium to Mr. Howland. Mr. Howland had, January 1, 1852, fifty hens and four cocks; since that time, these hens have laid 4,807 eggs, and raised about seventy chickens; one of these hens has laid 146 eggs during this period and hatched and raised a brood of nine chickens; one pullet of this brood began to lay on the 7th day of August, being then four months and twelve days old, and has now laid twenty-two eggs.

Of his mode of raising hens, Mr. Howland himself says:—

"My poultry house and yard, where I keep the larger part of my hens, is light, warm and dry, with a good supply of food and fresh water. I usually feed my hens with corn meal, mixed with water, cold in summer and hot in winter; I also feed them with corn, oats, boiled potatoes, meat, burnt bones, &c. The hens are always fat, and there is not a day in the year but what some of them lay. I sell my eggs at an average of about 15 cents per dozen; last year I sold my chickens for market, at from 8 to 10 cents per pound.

"One hen weighed, when dressed, 7½ lbs.; they averaged about 4 lbs. The cost of keeping them, as near as I can judge, is about one mill and a half per day."

Master Stephen W. Woods, of Greenfield, entered a few specimens of the Bantam and White Dorking fowls, which, although not equal to the other entries, exhibited a considerable interest in fowl raising, and we recommend to him a gratuity of fifty cents.

Mr. Peter Peck, of Shelburne, is awarded the first premium for the only but very beautiful lot of white geese; they were much admired by all eyes.

The committee regret that there were no entries of turkeys, and that there were so few kinds of hens; and we take this opportunity to recommend to the society that a greater number and variety of premiums be offered under this important head of our annual agricultural exhibition.

The labors of the committee are ended. Water, if left to itself, will find its level; so will most men; and we see not why the same principle may not be extended to hens. Therefore we drop the subject, hoping that it will find its proper place in the attentions of the good citizens of Franklin county.

All which is respectfully submitted.

W. Griswold, *Chairman.*

Butter.

The committee have attended to the duty assigned them, and feel gratified in expressing their satisfaction with all the samples offered for their inspection.

Whole number of entries, sixteen; a part of which, however, although fully equal in quality to any presented, lacked in the required quantity to be entitled to premium.

Most of the statements of the process of making and setting were so brief and indefinite as to be of little practical value.

The samples of Fred. G. Smith, John Wilder, and several others, were so equal, or so nearly equal to any offered, that the committee found it very difficult to decide, and would gladly have awarded more premiums if they had had the authority and the funds of the society would have permitted.

The committee trust that others will, for this time, "take the will for the deed," and that the citizens of Franklin will awake to their true interests and see to it, that a society which has thus far prospered beyond all expectations, shall be sustained by the necessary funds to enable it to increase its bounties and usefulness.

When we take into consideration how largely the product of the dairy contributes to the living of every family, the luxury of having good butter at every meal, its absolute necessity to even comfortable living, and its importance as a source of profit to the farmer—and the fact that no county in the State is better adapted to dairying, we cannot forbear urging upon those in the business, and *not fully posted up*, the importance of more care in the making and packing their butter for market. It is well known that a large proportion of the butter sent to our markets, is sold for 2d and 3d quality, at 10 to 50 per cent. less than first quality, and at an actual loss to somebody, mainly for the want of knowledge or a little care in the making, setting, &c., actually costing as high as the best.

We do not intend to suggest any new process; we think, with the writer of one of the statements herewith submitted, that to make good butter, it is indispensable "that all the utensils used should be kept perfectly clean and sweet." The cream should be taken off and churned at the proper time, and great care and judgment exercised in the salting. Some persons seem to think that butter must be high salted to keep, which is a great mistake, if it is otherwise properly made.

We would also caution those who put up butter in boxes or kegs against using those made of soft wood, especially bass-wood. A bass-wood cover to a box or keg will very soon spoil the whole package; and when the butter is to be kept, the keg should be soaked in brine and wiped dry before putting in the butter.

For the committee,

S. H. Reed, *Chairman.*

Mrs. Oliver Chapin, Leyden,	1st premium, .	$3 00
Mrs. Moses A. Barnard, Shelburne,	2d " .	2 00
Mrs. Kimball H. Howes, Ashfield,	3d " .	1 00
Mrs. Almon DeWolf, Deerfield,	4th " .	50

Bread.

The ladies who take plessure in the performance of household duties, furnished your committee with numerous specimens of bread of a superior quality. Probably no department of housewifery better bespeaks the well qualified housekeeper, than is developed in the manufacture of good, light, sweet, wholesome bread. And your committee take pleasure in saying, that they believe the specimens exhibited to-day, as a whole, exceed those of any former year. The number of entries was twenty-two. Several specimens were unaccompanied with written statements of the process of making. It is presumed that the rules of the society are well known in regard to premiums. Those specimens that had no accompanying statement in conformity to the rules of the society, it is presumed were presented by ladies who wished to add to the appearance of the show, and not intended for premiums.

The premiums were awarded as follows:

1st premium to	Mrs. Peter Peck, of Shelburne, .	$2 00
2d "	" Mrs. Oliva Williams, of Sunderland, .	1 00
3d "	" Mrs. Solomon Smead, of Shelburne, .	50
4th "	" Mrs. Moses A. Barnard, " .	25

To Miss Augusta M. Taft, of Greenfield, a Miss of

fourteen years, the committee recommend a gratuity of fifty cents, for a beautiful specimen of bread, . $0 50

Asa Howland, *Chairman.*

Greenfield, Sept. 28, 1852.

The statements below accompanied the specimens to which premiums were awarded:—

First premium.—Take one pint of milk, and one pint of boiling water, thicken with flour, and let it stand still until it rises, which will take four or five hours, then add one quart of warm milk, and flour enough to make it bread.

Second premium.—Made of home raised flour, risen with potato and hop yeast, mixed with new milk, and baked in a brick oven.

Third premium.—Take two cups of water, five spoonfuls of milk, one teaspoonful of salt, stir in flour until it is of the consistency of griddle cakes, then set it in a warm place until it begins to rise, then put it in a cool place until you are ready to bake, if it be one or two days. When ready to bake, add another cup of warm water, (and if sour, dissolve one teaspoonful of salæratus in the water,) and stir in a little more flour, set it in a warm place, and it will rise in about thirty minutes; then mix your bread with warm milk, and bake as soon as it rises, which will be very soon.

Fourth premium.—Take two cups of warm water, half a cup of milk and one teaspoonful of salt, thicken with wheat flour, set it in a kettle of warm water to rise it, which will be in five or six hours, add one quart of warm milk, mix to a thick batter, put it in pans and set in a warm place to rise; bake half or three quarters of an hour.

Fruit.

* * * * * * * *

The committee have been gratified with the exhibition of fruits and vegetables. The apples are better than on any former occasion. There are more varieties and better specimens.

Other fruits seem to the committee inferior to those of former

years. The failure of the peach was anticipated. The severity of the winter last past proved fatal to most of the peach buds, and to a large portion of the trees in this county. A few hill towns, as Shelburne, Conway, and Whately, escaped. A few specimens were presented, which were very fine. The Messrs. Wells, of Shelburne, exhibited several choice varieties of seedling peaches. This we regard as by far the surest mode of raising peaches in our climate. If we mistake not, it will be found that seedlings suffered but little from the cold of last winter, while budded trees were badly killed. Of *pears* there were but few from the county. A beautiful specimen of Bartlett, raised on Mountain Ash, was presented by Mr. (I know not who.) A choice collection was presented by his Honor, Lieut. Gov. Cushman, from Roxbury. They were much admired, and it is to be hoped may prove a means of exciting an increased interest in the cultivation of this excellent fruit. Next to the apple, there is probably no fruit which we can raise more easily than the pear.

Of plums, some fine specimens were presented by Mr. Field, of Gill, who also exhibited some two varieties of pears. Of quinces, there were but few, those were uncommonly large and fair.

Fine specimens of native grapes were exhibited by Mr. Gunn, of Montague, Mr. E. E. Robinson, of Sunderland, and others. But the committee looked in vain for Isabellas or Catawbas, both of which are universal favorites, and may be produced here in perfection. The display of vegetables was highly creditable to the contributors. Pumpkins, squashes, beets, turnips, carrots, cabbages, potatoes, and onions, have attained to such enormous dimensions as to give evidence that, however much others may have suffered from want of moisture, they have been revelling in profusion.

Respectfully submitted by the committee,

R. B. HUBBARD, *Chairman*.

D. and H. Wells, of Shelburne, apples,	1st	premium,		$3 00
Orsamus O. Bardwell, "	"	2d	"	2 00
Orlando Hawks, of Deerfield,	"	3d	"	1 00
Henry M. Fisk,	"	4th		50

C. K. Grennell, gratuity, apples,	$1 00
George W. Carpenter, best specimen, less than three varieties,	1 00
Alfred Wells,	75
Walter Bell, Jr., of Coleraine,	50
Clark Thompson, N. Salem, pears, 1st premium,	1 00
David R. Wait, " 2d "	50
S. W. Root, of Montague, quinces,	1 00
John A. Andrews, of Shelburne, "	50
Roswell Field, of Gill, miscellaneous fruit,	1 00
R. B. Hubbard, fruit,	1 00
Samuel Stoughton, of Gill, fruit,	1 00
J. J. Pierce,	75
M. H. Tyler, of Greenfield,	50
Rev. J. Richardson, of Greenfield, fruit and flowers,	1 00

HAMPSHIRE AGRICULTURAL SOCIETY.

Farms.

There is no art which can be compared in importance with that of agriculture, for to it belongs the production of food for man and animals; on it depends the welfare and development of the whole human species, and the riches of states. There is no other art in which the application of correct principles would be more productive of beneficial results, or of greater and more decided importance. Hence it appears quite unaccountable that we vainly search for leading practical principles in the writings of agriculturists. The methods employed in the cultivation of land are different in the same districts. In the same neighborhood, farms lying side by side, separated only by titles of division—the soil of the same composition, with a location equally favorable—are cultivated essentially different from each other. When we inquire the causes of these differences, the answer is, mainly, that they depend on circumstances. No answer could show us more plainly the need of agricultural knowledge, to ascertain what these circumstances are. Each cultivator of the soil is attached to his own chosen way, and plodding on in his long beaten path, turns neither to the right hand nor to the left, to inquire of his neighbor in what his success depends. Whether he has made a judicious disposition of his fertilizers, or what to give to each plant, that the object in view may be attained; whether he has deepened and properly pulverized his soil, so as to give full play to all the rootlets of his plants, that they may descend in any and all directions in search of food sufficient for their full and perfect development. Now it seems to us that it must be self-evident to every farmer that heat, light, moisture, and the component parts of the atmosphere, are indispensable to the

growth of plants. Yet certain substances, if not contained in the soil, must be supplied to it in the form of manure. The question then arises, what does the soil contain? and what are the substances contained in the component parts of the manure? Here we have to acknowledge our ignorance and incapacity to judge of the defects of our soils, or even to prescribe a systematic remedy, or to analyze and separate the parts of either soil or manure. Until these points are satisfactorily determined, a rational system of agriculture cannot exist. Now, how shall these differences of cultivation on similar soils be fully and satisfactorily reconciled? What quantity of manure shall we apply to obtain a full crop at the least expense? What fertilizers act upon the soil, and what upon the crops? And how much is to be charged to the account for *circumstances?* We do not hesitate to say, and fully believe, that when the minds of the agriculturist, the chemist, and the physiologist, are brought to bear upon this subject unitedly, for the complete solution of these questions, then, and not till then, will a beginning have been made. Let there be some reliable facts, some leading and well established principles, approved and practised upon by scientific men, whose sole object is to advance the farming interest by establishing a rational and well founded system of agriculture. Then the farmer will be enabled to prosecute his business by well tried and fixed rules, in full confidence of success. The laws of nature better understood and obeyed, we shall then better understand how to feed hungry plants, in order to obtain a full and perfect development of all their parts, and to prepare our soils and compost our manures with reference to the particular crops. With a system of well digested and practical rules, we shall be enabled to work with cheerfulness, and to secure more bountiful returns.

The Hampshire Agricultural Society embraces a territory that will not suffer in comparison with any other in the State, of its extent. Its leading interests are agricultural. The farmers are industrious, intelligent, and active, and are increasing in wealth in two ways. One way is, to make two acres out of one; the other is, to add one to one, and thus make two. The former is generally the most productive of good to the community. Let us be understood. Some farmers in the

river towns have divided their farms with their sons, and erected a new set of buildings throughout; and have yet again subdivided with their sons, and again erected new buildings. It is remarkable to find all these barns and granaries together, on the old homestead, filled to their utmost capacity. This is what is meant by making two or three acres out of one. It shows, conclusively, the capacity of land under a high and judicious system of cultivation. But adding acre to acre, by purchase, beyond a suitable sized farm, adapted to its owner's circumstances, seldom, if ever, contributes much knowledge of agriculture. Here, the leading object seems to be *to multiply acres*—to enlarge the area of territory—to grasp all the eye can see or the purse can reach. These are the farms on which are found, generally, dilapidated buildings; barns and granaries but scantily filled. The owner finds neither time to feed his plants or his cattle. And how can he? His spears are few and far between, and his cattle must count the cost as they eat.

There were five farms entered for premium, viz.: three in Hadley, one in South Deerfield, and one in Belchertown. Your committee visited all of them, on or about the first of July, and four of them on the first of September.

Your committee feel a great delicacy in awarding only two premiums, among so many deserving competitors. After mature consideration, we have awarded the first premium, of $20, to Linus Green, of Hadley; and the second premium, of $12, to Moses Stebbins, of Deerfield.

Mr. Green's farm is situated in the east part of Hadley, near the west line of Amherst. It is in the form of a large basin, with its northern and western sides a little elevated, and its southern a little depressed. Nature seems to have been more lavish of her gifts in the formation of this farm, than in any other, probably, of its size, within the limits of the society, and its owner has been shrewd enough to appreciate and fully carry out the plan and design of nature. He has so divided the farm as to have nearly all his tillage land and pasturing on the elevated parts, and his meadow ground near the centre of the basin. Thus laid out, it is utterly impossible for any fertilizing matter once put upon the farm to escape, before it is completely exhausted. Its tendency is from the circumference

to the centre, and from the centre to its lowest depressed side. No bushes venture so much as to claim acquaintance with the owner. As for stumps, both great and small, if they ever had a preëmption right of terra firma, that right is well nigh extinguished; of which the stump fences give unmistakable proof. For a more particular account of this farm and its crops, see Mr. Green's statement, annexed.

Mr. Stebbins's farm is situated in Deerfield, one mile north of Sunderland Bridge, between Mt. Sugar Loaf and the Connecticut River, and not unlike other portions of the Connecticut Valley, beautiful in the extreme. This farm is a very little undulating, from the mountain to the river; of a deep alluvial soil, resting on a subsoil of gravel, with the exception of some ten acres. This part is of a light sandy texture, and has been so much renovated by an admixture of clay, as to produce most luxuriant crops. This farm is easy of access, agreeable in form, and its owner keeps it in systematic order. Bushes come not within his enclosure; and if, perchance, some straggler should venture to root and ground himself, he has leave of absence on a very short acquaintance. There are no unproductive pieces, no marshy or unprofitable spots, simply because its owner cannot afford to cultivate them for nothing. It is (*multum in parvo*) a great deal in a small compass; a hundred acre farm contained in thirty-five acres. It is all farm.

For a more particular account of this farm and its products, see the annexed statement of Mr. Stebbins.

R. T. Wheelock, *Chairman.*

Linus Green's Statement.

My farm contains one hundred acres, and is situated in Hadley. I came in possession of sixty acres of it twenty-five years ago, and have since enlarged the number of acres by purchase. My object, as a farmer, has been twofold; to raise full crops, and to increase the productiveness of my farm. Deep ploughing is my favorite method. My habit is to *plough eight or nine inches deep*, with three yokes of oxen. The whole farm contains not half an acre that I have not turned over with the plough. I compost all my manure with Whately lime, for top-dressing, and plough in my manure. I am accustomed to

mix redtop and herds-grass, in the proportion of one peck of the former to one-half bushel of the latter, on moist land. Mixing seed-corn I have found advantageous. All my land has been kept in a high state of cultivation, by judicious rotation of crops. It is kept clear of bushes and weeds. In some years, I have employed more labor than during the past season. All the work on the farm, this year, was performed by myself and two boys, one 17 and the other 15 years old. We mowed thirty-two acres, which yielded sixty tons of good hay. Eight acres we planted with corn, seven with oats, five with rye, and we pastured the remaining forty acres.

PRODUCTS.

65 tons of hay, at $15,	$975 00	
497½ bushels of corn, 75 cents,	373 12	
353 " " oats, 50 "	176 50	
60 " " rye, 75 "	45 00	
Pasturage of 15 horned cattle, 26 weeks, 33⅓ cents each,	150 00	
" " 75 sheep, 58 cents,	43 00	
Increase in value of sheep,	100 00	
50 bushels potatoes, 33⅓ cents,	16 67	
25 " turnips, 25 cents,	6 50	
75 " winter apples, 33⅓ cents,	25 00	
150 lbs. butter,	25 00	
150 lbs. cheese,	10 50	
375 loads of compost manure,	100 00	
100 " " barnyard "	100 00	
		$2,421 29

EXPENSES.

My labor, 225 days, at $1,	$225 00
Boy's " 135 " " 75 cents,	101 25
Boy's " 208 " " 50 "	104 00
Grass seed,	15 00
1½ bushels seed corn, $1,	1 50
16 " " oats, 50 cents,	8 00
4 " " rye, 75 "	3 00
3 " " potatoes, 50 cents,	1 50
375 loads compost manure,	375 00
100 " barnyard "	100 00

Interest on land, $50 per acre, . .	$360 00	
Taxes, ...	57 00	
		$1,351 25
Net profit, ...		$1,070 04

Moses Stebbins's Statement.

In compliance with the rules of our society, I herewith transmit a statement of the management and products of the farm which I offer for a premium. This farm contains 35 acres of land, ten acres of which is a light, sandy soil, totally neglected previous to the year 1838. I then entertained the idea that such soils would leach all the manure out if any was applied. It had been kept for buckwheat, or occasionally a part of it sowed to rye, the product of which was from six to eight bushels per acre.

In the spring of 1838 I resolved on an improvement of my farm. Instead of summering my manure in my yards, to blow off in the atmosphere, and then put the chaff into the hill for corn and potatoes, I hauled it out in its green state, and spread at the rate of 25 loads per acre, with 200 lbs. of plaster, and ploughed it in, for corn. I made about 100 loads of manure in one year. The produce of my farm at that time, previous to 1838, was about 20 tons of hay, from 150 to 500 bushels of corn, 200 bushels of oats, 30 of rye, and 50 of potatoes. I have pursued a regular rotation of crops on most of this land since 1838, with corn, oats, and grass. All of this land, excepting two acres, comes under the plough once in from three to six years, when I plant two years in succession, manuring as before mentioned, then sow to oats, and seed to grass for mowing. I then sowed one peck of herds-grass to ten pounds of clover seed per acre. As I pursued this system my crops increased in quantity and quality, and my lands improved at the same time. As I improved my lands I have substituted corn and wheat for rye, and barley for oats; and instead of one peck of herds-grass seed to 10 lbs. of clover seed per acre, I now sow from three pecks to one bushel of herds-grass seed per acre, always having clover enough, and more than I want for hay, in the soil. It has been my object for the last ten or twelve years to bring all my land into as even a state of culti-

vation as possible. And this year the best corn which I raised was on land which in 1838 would not produce ten bushels of rye per acre, and besides, it was planted to corn in 1851. I ploughed and subsoiled the land, then spread 25 loads of straw manure and 200 lbs. of plaster per acre, and harrowed well; planted three feet by three feet, with Canada corn, hoed four times, and harvested 240 bushels of ears of corn from one acre; and from one square rod of ground I harvested 34 quarts of shelled corn. I will recommend Messrs. Prouty & Mears's Michigan, or double plough, for green sward, with the C subsoil plough to follow. I subsoiled a part of another field, manuring the whole field equally well, and I could see a great difference in the corn, the subsoiled portion of the field being much the best. Salt is recommended as a good application for much of our soil. I have made some trial of it for wheat and grass, with good results. For wheat I sow from five to seven bushels per acre; sow with the wheat. For grass about the same quantity; sow in the fall.

The produce of my farm in 1851 was estimated as follows, viz.: hay, 55 tons; barley, 200 bushels: wheat, 75 bushels; corn, 600 bushels; potatoes, 50 bushels.

This year my crops, in common with others, have suffered with the extreme drought, especially my grass and a part of my corn, it being on a light, sandy soil.

The produce this year we estimated about as follows, viz.:—

Hay, 46 tons, $12 per ton,	$552 00	
Barley, 130 bushels, at 75 cents,	97 50	
Wheat, 14 " " 8 shillings,	18 67	
Corn, 700 " " 75 cents,	525 00	
Corn fodder, 30 tons, at $5 per ton,	150 00	
Straw, 4 " " 5 "	20 00	
Potatoes, 150 bushels, at 40 cents,	60 00	
Apples, 150 " " 12½ "	18 75	
		$1,441 92

My expenses for the present year, for labor, outlays on my farm, and interest on the 35 acres, at the market value, are about as follows:—

Interest on land, value $3,000,	$180 00
Taxes on the same,	25 00

Two hands, eight months, at $14 per mo.,	$224 00		
One " four " " 12 "	48 00		
2,500 lbs. plaster, ...	10 00		
Grass seed, ...	10 00		
50 Bushels salt, at 40 cents, . . .	20 00		
150 " ashes, at 15 cents, . . .	22 50		
7 Tons hay, at $10 per ton, . . .	70 00		
150 Bushels corn, at 75 cents per bushel,	112 50		
3 Tons straw, at $5 per ton, . .	15 00		
			$737 00
Leaving a balance in favor of the farm, of . .			$704 92

besides the increase in the value of the farm, which I consider equal to my labor on the farm.

In connection with this 35 acres, I have 75 acres of pasturing, which I have improved very much in value, by the use of plaster. There is many an old and worn out pasture which may be renovated by this cheap and easy application. I have an orchard, set in 1850, of 74 trees, on a piece of pasture land, without any manure, making free use of lime, salt and plaster. The trees are very thrifty, coming forward quite as fast as desirable.

We are making now, 325 loads of manure annually. I draw some 75 loads of earth into my yards to absorb the liquid manures, which I use for a top-dressing for corn and grass.

South Deerfield, Oct. 20, 1852.

Reclaimed Meadow Lands.

For the consideration of the committee on reclaimed meadow lands, four pieces of this description were presented, all of which showed marks of improvement that were alike commendable to the skill of their cultivators, and indicative of farther efforts on the part of farmers in our region, in this branch of agriculture. Indeed, the stalwart lords of the soil are waking up to a sense of the importance of this subject, and it is with much joy that we hail the approach of the time, when all low boggy lands that are scattered as eye-sores here

and there over the county; where now the rank thistle, and coarse swampy grass are nodding in the wind, shall be cleared of the superabundance of vegetable growth — their rich soil turned over by the ploughshare's bright edge, and made to give life to, and nourish large fields of waving maize and flowing grain. Our farmers are beginning to see that these waste portions of their lands, from which, heretofore, no profit has been realized, may be made to yield a rich reward for labor spent in their improvement; and with them to be convinced of the practicality of a thing, is but father of the consequent and corresponding action.

The proof of this remark may be demonstrated by the evidence of one's senses, as he rides leisurely along after his own steady mare, and not behind the fierce iron horse, through the villages and back parts of the large towns in our vicinity. The sturdy ploughman has sworn entire and speedy destruction to all noisome swamps, where pools of stagnant water collect, that load the surrounding air with poisonous vapors; and, consequently, St. Patrick-like, to the vile snakes and frogs with which they are filled. The benefits of such improvements are not seen in the increase of the farmer's wealth alone, but they are found, too, in the more healthy, physical and moral development of the community around. For a more explicit statement of these benefits, we refer you to the valuable report of Prof. W. C. Fowler, the last year's chairman of the committee on reclaimed meadow lands. We will only remark, that man's highest wealth does not consist in the number of dollars with which his pocket-book is lined, nor yet in the broad expanse of his paternal acres; there is a wealth of intellect — a wealth of soul, compared with which the wealth that money can give dwindles into insignificance, and deserves not the name.

It would be curious and instructive, to trace out the intimate connection that exists between the cultivation of the useful, as well as the more ornamental and scientific arts of husbandry, and the greater expansion of the intellect and the heart, that must necessarily be the result of such a direction of one's energies. It was in consequence of such a union, that a Coleman, and a Downing — men who were ever quick to see, and keenly alive to all of beauty Nature and her works show

forth—were led to devote much labor and earnest thought to the improvement, in this respect, of the rural districts in New England.

They, aside from a consideration of the pecuniary benefits which works of improvement might confer, would not tolerate, in their vicinity, a marshy fen, that breeded swarms of summer flies, and filled the air with the seeds of pestilence and death, for the reason that the appreciation of the beautiful, and a taste for what is grand in natural scenes of the community around, would be in a manner perverted, by the daily sight of such foul spots on Nature's fair vesture.

But we will not farther tread the flowery fields of philosophy, lest we should find ourselves irrecoverably lost in their mazy paths; and so it only remains to announce who were the successful competitors for your premiums. John A. Morton, of Hadley, in consideration of the improvements on a plat of ground presented by him, was awarded the first premium, of ten dollars; and Edmund Hobart, of Amherst, drew six dollars for his successful efforts in reclaiming swampy land. Statements of their work they have prepared, and they will accompany this report. As your committee were limited to the bestowal of only two rewards, of course the remaining entries must be passed over into oblivion.

S. Powers, *Chairman.*

John A. Morton's Statement.

The piece of meadow land, to which I ask your attention, contains about two and a half acres. The soil, a part of it, was a light peat mud, a part of it bearing on the clay, or bearing a clayey subsoil. I commenced working upon it in August, 1848. It was covered with bogs, brush, and coarse water grass, and consequently was of little or no value. My first operation was to ditch it. I cut a ditch on three sides, so as to drain off the water. I then cut and burnt off the brush, and commenced work with a heavy meadow plough, two yoke of oxen, bog hoe and ax, and turned it well over, ploughing about one-third acre per day. The next May I dragged it thoroughly with a heavy drag, and planted the peat with potatoes, and the clay or hard

pan with corn; manured in the hill with compost manure. Had a fair crop of potatoes, and thirty bushels of corn to the acre. The next spring, ploughed in ten loads of green stable manure to the acre, on the clay, and planted the whole to corn, manuring it all in the hill, which was a good crop, averaging about thirty-five bushels per acre. In the spring of 1851, I sowed it to oats and twelve pounds of herds-grass, with two pounds of northern clover, to the acre. Oats, a good crop. I mowed it the present season, cut $1\frac{1}{2}$ tons to the acre. But owing to the dryness of the summer, the clayey part was much injured by the drought. I think the four crops have much more than paid for the labor, seed and manure. The land, I consider worth $50 per acre; which, four years ago, was nearly worthless.

Hadley, Oct. 28, 1852.

Edmund Hobart's Statement.

Gentlemen,—The piece of meadow land which I offer for premium, contains about two acres. It is surrounded with hills. From my earliest recollection it has been a worthless piece of ground, producing nothing of value. It came into my possession nine years ago. I had always considered it a blot upon the farm, and I was determined to reclaim it, if possible. Considering it of the first importance in reclaiming meadow land, to get rid of the water, I cut a ditch around the whole, taking off the springs which came out of the surrounding hills. I then cut one through the centre, the two laying the piece nearly dry. In the fall of 1848, it being very dry, I commenced clearing the surface of bogs, brush, roots, &c., with which it was completely covered, taking off about 100 cart loads of the same. I then covered the surface to the depth of about two inches, with loam from the surrounding hills, and seeded thereon herds-grass, redtop and clover. It being late in the season, when seeded, and having put on no manure for a top-dressing, my first crop of grass was light. The next season I applied a top-dressing of barnyard manure with wonderful success, cutting two tons or more of good hay to the acre. Since then my crops of hay on the same have been remarkably good, having the past season cut nearly four tons. I now

consider it one of the most profitable pieces of land on my farm, producing the greatest crops with the least expense.

EXPENSES OF RECLAIMING.

90	Rods of drain, at 12½ cents, , . .	$11 25	
	Clearing away roots, bogs, &c., . .	20 00	
200	Loads of loam, and carting, . .	32 00	
	Seeding, ...	6 00	
		$69 25	
	One year's interest on outlay, . .	4 15	
			$73 40

RESULT.

100	Loads of muck, ...	$25 00	
2	Acres, worth $150 per acre, . .	300 00	
			325 00
	Net gain, ...		$281 60

Grain Crops.

Twenty-one entries were made: two of wheat, seven of rye, seven of Indian corn, two of oats, two of broomcorn and one of barley.

Your committee would remark that the few attempts which have been made in this region, at wheat growing the past season, have been eminently successful. We have examined the crops of Joseph Adams & Sons, and of John A. Morton, both while growing in the field, and since harvested, and we have the best possible means of knowing that the bread, biscuit, and pastry made from their wheat cannot be beaten. Particular attention is asked to the accompanying statements of these gentlemen.

Of the seven entries of rye crops, two were accompanied with properly attested statements. These statements, one by Thomas Hastings, and the other by W. E. and S. S. Dickinson, are presented herewith. With regard to the corn crop, we invite special attention to the statements of Royal W. Smith and William P. Dickinson, because we regard them as

highly instructive. These gentlemen, seem to us, not to have engaged in the foolish strife of seeing how much corn they could possibly take from a single acre, without regard to the economy of the operation, but to have cultivated with a wise reference to the profits. Others, within our knowledge, have raised good crops at too great a cost: "have paid too dear for the whistle." It signifies nothing to raise a hundred bushels of corn on an acre, at the expense of half the manure on a farm. These men have raised from 50 to 90 bushels to the acre on large fields and at a small cost. For this we commend them, and we hope others will profit by their example. Mr. Moses C. Porter, of Hatfield, failed to comply, in all respects, with the society's rules, and could not therefore compete for the premium. His statement is not duly attested; and yet, from our personal acquaintance with him, knowing him, as we do, to be a gentleman of strict integrity, we have implicit confidence in every word which he states, except that after due allowance for shrinkage, we believe his corn would hold out just about 100 bushels but not more. We believe that Mr. Porter has cleared more than fifty dollars from that acre this year. Still we would guard ourselves and others against wild conclusions with regard to the profits of corn growing. It must be remembered, that in the growth of this crop, he has used up a rich, deep turf, such as will not accumulate on his land again for many years, and that in the mean time he must either be content with less crops, or go to a great expense for manure, and that in either case the profits must be diminished. We, however, annex his statement, as one which we consider highly instructive.

In addition to the foregoing, we would state, that Mr. Elijah Boltwood has this year raised an uncommonly fine crop of corn. He has failed to comply with the society's requirement of a written report. We examined the crop in September. The growth was great, and was very nearly equal throughout the field. He has since had a survey of an acre; has harvested and measured the corn of that acre, and found it to be 180 bushels of ears, equivalent, as he supposes, to 90 bushels of dry shelled corn.

J. A. Nash, *Chairman.*

Joseph Adams & Sons' Statement.

The land on which our wheat grew, is in Hadley, and contains one acre. The soil is new and a sandy loam. The wood was cut off in the winter of 1851, and consisted of hard and soft pine, with an undergrowth of maple. In June, 1852, the land was burned over and ploughed once, with a digger, which I prefer to the common plough. My reasons are three, viz.: The digger can be tended more easily by one man, and a single pair of oxen is a sufficient team. The digger will pulverize the soil, among stumps and roots where the plough will not work. And it does not invert the soil, while it allows the ashes to remain near the surface, which is a benefit to the roots of the grain. We applied no manure, but harrowed in August, and again ploughed September 12th. A few days elapsed, and we sowed at the rate of one bushel and a half to the acre. Our seed was Canada Flint Wheat that had been, for twelve hours, soaked in brine, and then rolled with lime.

We harvested our crop on the 20th of July, 1852, and threshed it in August. Our yield was forty bushels, three pecks, and two quarts, measured by the statute rate of sixty pounds to the bushel. In the opinion of the surveyor, the quantity of wheat was less by two bushels, on account of stumps, but of this we make no account.

VALUE OF CROP.

$40\frac{6}{32}$ Bushels, at $1 25 per bushel, . .	$51 02	
$1\frac{1}{2}$ Tons straw, at $5 per ton, . .	7 50	
		$58 52

EXPENSES.

Ploughing and harrowing, ...	$6 00	
Clearing, ...	2 00	
Seed, ...	2 25	
Salt, lime, and sowing, ...	50	
Harvesting, ...	4 00	
Threshing, ...	3 00	
Interest on value of land, ...	10 00	
		27 75
Net profit on one acre, ...		$30 77

John A. Morton's Statement.

The wheat crop I offer for premium, and which your committee inspected, was grown, on one acre and thirteen rods of ground. The soil was gravelly. The land was lightly manured a year ago last spring, and a part of it put to tobacco and a part to potatoes, which was a good crop. After these crops were taken off, the land was ploughed once, and five loads of compost manure spread on the poorest part of the land, and sowed with two bushels of seed, about the 20th of September. The seed was first soaked in brine, then rolled in lime. Land valued at $50 per acre. Raised 33 bushels of wheat, weighing 62 lbs. per bushel.

VALUE OF CROP.

33 Bushels, at $1 50 per bushel, at which price I sold a part of it,	$49 50	
Straw,	8 50	
		$58 00

EXPENSE.

For Ploughing,	$1 25	
" Seed, salt, and lime,	3 00	
" Sowing and harrowing,	1 00	
" Harvesting and threshing,	6 50	
" Interest on land,	3 00	
		14 75
Net gain,		$43 25

Hadley, Oct. 27, 1852.

Thomas Hastings's Statement.

The land on which my rye was grown, was pasture, somewhat stony. Have pastured it four or five years. I ploughed in June, 1851, and in August dragged and cross-ploughed, again dragged, and in October sowed it. I used no manure. The rye was gathered in July, 1852, and yielded 39 bushels and 53 lbs., by weight, at 56 lbs. per bushel.

VALUE OF CROP.

39 Bushels 53 lbs., at 92 cents per bushel,	$36 73	
$1\frac{1}{4}$ Tons straw, at $6 per ton,	7 50	
		$44 23

EXPENSE.

For one bushel seed,	$0 92	
" Ploughing, dragging and sowing,	5 00	
" Harvesting,	2 00	
" Threshing,	3 50	
" Interest of land, worth $40,	2 40	
		$13 82
Net profit,		$30 41

W. E. & S. S. Dickinson's Statement.

The land on which our rye was grown was new, and contains one acre. The wood was cut off in the spring of 1851, and in September following, we burned the brush, bushes, &c. The soil is a dark loam, rather wet, and was not manured. We sowed white rye, and grass seed, broadcast, in October, and immediately harrowed the surface. We used one bushel of rye and one peck of herds-grass to the acre. We harvested the crop of rye about the middle of July, 1852, and had forty bushels, three pecks and three quarts, at 56 lbs. per bushel.

VALUE OF CROP.

$40\frac{27}{32}$ Bushels, at 80 cents per bushel,	$32 67	
$1\frac{3}{4}$ Tons straw, at $6 per ton,	10 50	
		$43 17

EXPENSE.

For Seed,	$0 80	
" Sowing and harrowing,	4 00	
" Harvesting,	2 50	
" Threshing and cleaning,	2 50	
" Interest on land,	2 40	
		12 20
Net gain,		$30 97

R. Wales Smith's Statement.

The crop of corn which I offer for premium, was raised in Hadley, on one acre of loamy soil. The lot was in grass, until November, 1851, when I ploughed eight inches deep. Last

spring I harrowed, and put on five loads of barnyard manure, which I harrowed in. I planted about the 18th of May, and then manured in the hill, with ten loads of compost, made of five loads of yard manure, ten bushels of lime, and 150 lbs. of plaster. I hoed three times. About the 15th of September the corn was cut and stacked in the field. It was harvested early in October, and the yield was 180½ bushels in the ear, weighing 85 lbs. to the bushel.

VALUE OF CROP.

The crop, equal to 90 bushels, shelled, at 75 cents per bushel,	$67 50	
Fodder, two tons,	10 00	
		$77 50

EXPENSES.

Ploughing,	$2 50	
Harrowing,	1 00	
Seed, one peck,	25	
Manure, fifteen loads,	15 00	
Planting and hoeing,	5 00	
Cutting and stacking,	2 00	
Harvesting,	5 00	
Threshing,	1 50	
Interest on land,	3 50	
		35 75
Net profit on one acre,		$41 75

William P. Dickinson's Statement.

I herewith send you a statement of one acre of Indian corn. This acre is part of a field of eight acres which has been pastured a number of years, and had become cold and mossy. In the fall of 1851 I ploughed it seven inches deep, and sent a sample of it to Prof. Norton, to analyze. He found it very deficient in lime, chlorine and sulphuric acid, and advised an application of lime, plaster and salt. Last spring I spread and harrowed in eight loads of compost manure to the acre, and made a mixture of four parts lime, one of plaster, one and one-half pounds of salt to the acre, and put a handful of the mixture in each hill, at planting. It was hoed twice, and cut up

the last of September. I have just husked one acre of it, as measured by Mr. Williams, which has yielded one hundred and twenty-six and one-half bushels of ears, or sixty-three and one-fourth bushels of corn. (I had a few beans where the corn was missing.) The following is a statement of the expense of cultivation:

Ploughing,	$2 00	
Manure,	8 00	
Planting,	1 50	
Seed and hoeing,	2 25	
Cutting and husking,	4 00	
		$17 75
Cr. by 63¼ bushels corn, at 75 cents,	$47 43	
" Stalks,	7 00	
		54 43
Leaving a profit of		$36 68

Hadley, Oct. 25, 1852.

Moses C. Porter's Statement.

The following is a statement respecting one acre of Indian corn raised by me the summer of 1852, on sward land.

COST OF LABOR.

Ploughing, harrowing and rolling,	$4 50
Five loads of manure,	7 50
Putting manure in the hole, and planting,	3 00
Eight bushels of ashes applied after first hoeing,	1 80
Hoeing, four times,	7 00
Cutting and stacking,	2 50
Harvesting,	7 00
	$33 30
Number of bushels of corn raised,	112½
Tons of fodder,	3½

Root Crops.

There have been two entries of potato crops, four of carrots, and one of onions.

The small number of entries of these important crops is probably owing, in part, to the fact that this is the first time a premium has been offered on any of them by this society, and in part, to the small number and amount of premiums offered. The committee, however, entertain the hope that the society will continue to stimulate and encourage this branch of agriculture. It may be doubted whether any premiums paid by agricultural societies do in fact benefit the community more than those offered on crops, to be accompanied by a plain statement describing the manner of raising the crops, so that others may follow the example.

The premium of $5 for the best acre of potatoes, we have awarded to Mr. James Cowles, of Amherst, whose statement is appended; as is also that of Mr. W. P. Dickinson, of Hadley, whose experiments, intelligently conducted and clearly stated, seem too valuable to be lost, although we have no premium at our disposal to award him. The fact mentioned by him of the greater productiveness of potatoes grown from seed brought from a distance, agrees fully with the experiments of some of the committee.

The premium of $3 for the best quarter acre of carrots has been awarded to Messrs. Nathaniel and Brainard Smith, of Sunderland.

As the carrot is but little cultivated in this vicinity—though it is evidently growing in favor—and is yet, we believe, to be more correctly valued, and to become an important crop, we have collected a few facts and opinions respecting their productiveness, the manure used, the comparative cost of their cultivation, and their comparative value as food for animals, from the Transactions of the Agricultural Societies of Massachusetts for 1851:—

Lyman Mason, of Beverly, on 42 rods of land, manured at the rate of six cords, one-half leached ashes, the other barn manure, raised 260 bushels, being 992 bushels per acre.

Samuel Warner, of Hampden county, on one-fourth acre, manured with four loads of manure, (kind not stated,) raised 237 bushels, or 948 bushels per acre.

Jonathan Carlisle, also of Hampden county, on one acre of light, sandy land, manured with $5\frac{1}{2}$ cords of compost, raised 538 bushels.

Aaron Budding, of Leyden, on half an acre, manured with fifteen loads of stable manure, raised 384 bushels, or 768 bushels per acre.

The average product, per acre, of the crops entered for the premium of this society, the present year, is 753 bushels.

We have noticed in the document before named, several instances of the successful cultivation of this crop on the same land for several years in succession, among which is that of John W. Lincoln, of Worcester, who has raised them on the same land for five consecutive years.

In regard to the labor of raising them, Jonathan Copeland, of West Bridgewater, thinks it requires about the same to raise one-fourth acre of carrots as one acre of corn.

In regard to the value of carrots as food for animals, the editor of the Plough, Loom, and Anvil, says, in June, 1852:— "We have had twenty communications from various sources, all of which concur in saying that a peck of carrots will, with the same quantity of hay, keep working horses in as good condition, and many say better, than a peck of oats, or that a peck of carrots and a peck of oats are equal to half a bushel of oats."

The Germantown Telegraph says, that "Carrots not only possess fattening properties equal to oats, taking bushel for bushel, but it secures to the horse, in winter, fine health, a loose skin and a glossy coat of hair, which it is impossible to produce except by the use of the carrot."

John W. Lincoln, of Worcester, states from his own experience, of several years, that the use of carrots for cattle or swine is not less beneficial than for horses.

If the above opinions are correct it is obvious that an acre of carrots will produce a far greater amount of feed than an acre of oats, for on the same quantity of land that produces 40 bushels of oats from 500 to 1,000 of carrots may be grown.

The crop of onions, although very superior, did not cover sufficient land to comply with the rules of the society.

Samuel Nash, *Chairman.*

James Cowles's Statement.

I raised 75 bushels of Peachblow potatoes, the past season, on 45 rods of dark, loamy soil, on which I spread and ploughed

in nine cart loads of horse manure, putting hog manure, three loads in the hill, with a small quantity of plaster and ashes. Last year I raised 70 bushels from the same land.

On the remaining 115 rods, which was plain, sandy land, I put eight loads of coarse manure from the barnyard in the hills, hoed twice only. The yield was 133 bushels, making in all 208 bushels from the acre.

Amherst, Nov., 1852.

W. P. Dickinson's Statement.

The land upon which my potatoes grew was a worn piece of stubble ground. Early in May I ploughed in thirteen loads of coarse manure, and planted it soon after, with a little "shell lime" in each hill. About three-quarters of it was planted with Carters, the other quarter Merinos.

Part of the Carters were some I raised the previous year, part was seed obtained from Worthington, part was planted with small potatoes, part with large, part large and small together.

As the result of these experiments I found that the seed from Worthington yielded just double to that planted with my own seed, (although that came from the hills one year ago,) and also that they yielded the most where large and small were planted together, although not quite as large as where the seed was all large. There was also a difference in favor of the rows where I put lime. The following is the expense of cultivation:—

Manure, ...	$12 00	
Ploughing, ...	1 50	
Seed, ...	4 00	
Planting and hoeing, ...	3 00	
Harvesting, ...	4 00	
		$24 50
Cr. by 87 bushels Carters, 50c., . . .	$43 50	
" 40 " Merinos, 25c., . . .	10 00	
		53 50
Balance, ...		$29 00

Hadley, Oct. 25, 1852.

N. and B. Smith's Statement.

Our crop of carrots was raised on a quarter of an acre of land upon which broomcorn has been raised for ten or twelve years past. About the 1st of May, five or six loads of stable and yard manure were ploughed in. The land was then subsoiled, and fruit trees were set upon it eighteen by twenty feet apart. About the 1st of June, the piece was cultivated, harrowed, raked and sowed, with Willis's patent seed sower. The crop was harvested about the middle of November, measuring 194 bushels, weighing 48½ lbs. per bushel.

Value of crop at 33c. per bushel,		$64 02
Lease of land,	$4 00	
Manure,	6 00	
Ploughing and subsoiling,	75	
Sowing and seed,	75	
Preparing ground for sowing,	37	
Hoeing and weeding,	10 00	
Transplanting,	50	
Harvesting,	4 00	
		26 37
Net gain,		$37 65

SUNDERLAND, Nov., 1852.

BUTTER.

As a business of profit, butter making is one of the most lucrative that farmers in this section of country can engage in. Butter not only commands a high price in proportion to the actual cost of making, but always finds a ready market. Unlike most kinds of produce, that have a regular market season, and must be carried to a distance often to reach a market, this finds a ready sale at our own doors, at all seasons of the year. Many individuals of limited means, who own little, if any land, cannot conveniently keep cows, and are obliged to buy both butter and milk, for their tables. There are a class of such persons in every town, who buy and pay cash for their

butter. It also finds a ready market at all our country stores and groceries, in exchange for cash, or goods; so that butter never fails of finding a ready market. Those individuals who buy butter for their tables, understand well what we mean when we say that butter is a "cash article."

They know how much it costs to supply their families with butter for a single season, and that it is no mean item in their bill of yearly expenses, this "butter bill," especially when butter is from one shilling to twenty-five cents per pound. A young couple recently married, and who had just begun housekeeping, were asked how they liked the matrimonial state. "First rate," answered John, "only it *costs almost everything for butter.*" But we have extended these preliminary remarks farther than we intended, and will now hasten to give the statistical items of this report.

Whole number of entries, thirty. Twenty-nine lots contained upwards of ten pounds each. Only a single sample contained less than ten pounds. The whole display was one of the richest we ever saw, in the butter line; and as we received parcel after parcel of the "yellow lumps," we thought how much more desirable and beautiful was such an exhibition, than the finest collection of "yellow lumps" ever thrown to the surface from the mines of California.

Some of the fairest looking and best prepared parcels, beautifully stamped and ornamented, we were obliged to reject as unworthy of a premium, on account of being too salt, and savoring a little of "old age." Those who present butter for a premium, should always bring to the tables newly made butter, if they have any desire of obtaining it. But little attention is given to specimens, (let them be prepared with the nicest taste as to external contour,) if they are over salted, and flavored by standing in pine tubs, or have been kept for too great a length of time.

Repectfully submitted,

DAVID RICE, *Chairman.*

LEVERETT, Oct. 27, 1852.

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Fruit Trees.

* * * * * * * *

In the growing of fruit trees, two things are mainly important; the *first* is to secure healthy stocks; the *second*, good fruit. It is of as great importance to begin right in this as in any other enterprise. A mistake here, will carry defeat through every subsequent part of the work. It needs no argument to prove that the future beauty, health, fruitfulness and longevity of the tree, depends essentially upon the quality of the seed from which it springs. In this particular there has been almost entire neglect. No farmer would take his seed corn from a heap of threshed corn, of which there had been so selection of ears. But, in planting a nursery the usual practice has been, to go where apples are made into cider, and obtain a quantity of pomace, some of which is from apples of the worst quality, or only half ripe, or from old, decayed, ill-shaped and sickly trees. One might as well expect that the generous courser could be bred from the foundered jade, as that good trees could be grown from such seeds.

And where this is known, very few are found willing to pay it much regard. Most people are for doing things in the cheapest way. The nursery man is aware, that if he should be at the necessary outlay in procuring his seeds from the best fruit, of the most healthy trees, that he could not sell his trees so as to make himself whole—that his next neighbor, who obtains his seed with almost no expense, would undersell him in the market. To give a case in point. In one of our cities, not long since, a very large quantity of seedling trees, from common pomace, and which were as miserable in all respects as trees could be, were brought into market and sold for eight cents a piece, by the thousand. Very fortunately, they almost all died from ill treatment. When at the same time, well worked, healthy trees, of the first quality, might have been bought in the immediate neighborhood, for twelve and a half cents a piece. But most purchasers never think of asking a single question about the origin of the trees they buy. The miserable effects of this practice are manifested in every kind of trees, and especially in the peach tree. Everywhere we hear the complaint that peach trees are sickly; that they sel-

dom bear delicious fruit; and that in a few years they decay and die; and this is just what might be expected from the manner in which they are grown. It is from these sickly, decaying, miserable bearers that peach stones are collected for new trees. But if it is a law of nature, that like produces like, we may know before hand what sort of trees we shall have. Here is much room for reform. In those instances in which individuals have actually engaged in it, it is found by actual experiment that in many localities peach trees may be kept in a healthy and bearing state for fifteen or twenty years. Too much attention cannot be paid in the selection of such seeds as are fit for stocks. The old custom of taking such seeds as first come to hand, must be abandoned. And we are happy to state, that this subject is beginning to be appreciated as it ought by some of our best nursery men, whose example, it is hoped, will soon be followed by all.

After securing healthy stocks, the next object is to have good and delicious fruit. The finest trees which produce no fruit, or that which is not fit for family use, are of no value except for shade or fuel. This can be done only by grafting, budding, &c. The first trees planted in this country were nearly all natural or ungrafted trees; very few of which produced what might be called good fruit. And this was considered no great matter of regret; for by the first settlers, fruit was not much used, or even thought of as an article of daily food. Apples, in those early times, were grown only for cider, which the people soon learned to convert into cider brandy. And they rightly judged that bitter or crab-apples were as good for this use as any. But since this pernicious practice has been abandoned, there has been a demand for more delicious fruit, such as may be made an article of daily food; nor would your committee too severely censure those who were pioneers in the settlement of this country. In the first place, they had not the means of procuring the best kind of trees; and farther, such rich varieties as now exist, could not, in that time, have been obtained at any price. Fortunately, people have come to understand this subject better than formerly. Fruit for the table has come into general use, and the amount used is every year increasing. Extensive nurseries have lately been planted, in order to secure such trees as are wanted; and

still there has been an importation of foreign trees to supply the demand. But as yet there has been but a bare beginning in the required change. It is too true, that at this time, within the limits of your society, many trees are but mere cumberers of the ground, producing no fruit, or that which is scarcely worth gathering, and yet these trees occupy as much space, and make as heavy a draft upon the soil as the very best. Good winter apples seldom sell for less than fifty cents a bushel. But poor apples will not sell at all. And in regard to peach trees, but very few produce fruit of fine quality. The best quality of peaches have sold this year, at the rate of two dollars a bushel in this quarter; but who will buy the green, sour, bitter kind, which so often appear? Your committee are fully convinced, that if fruit trees were of the right kind, they would be worth to the owners twice or thrice what they now are, and would cost them scarcely a fraction more. In this report there is no room to speak of the culture of trees, or of soils or locations. But we wish to call the attention of this society to the introduction of dwarf trees into gardens and other grounds. Such trees are not only very profitable, but exceedingly beautiful and ornamental. They have this advantage; they bear well in three or four years, whereas the orchard tree does not bear much short of ten or twelve years.

All which is respectfully submitted,

JOHN SANFORD, *Chairman.*

PREMIUMS.

Samuel Dunlap, of Sunderland, $10 for best orchard; Theodore Pasco of Hadley, for best apple orchard, $8; and Elijah Boltwood, of Amherst, for next best, $6.

Theodore Pasco's Statement.

My orchard contains eighty-one trees. Some of them are nearly thirty years old, while others are fifteen. Twelve years after they were set, they were grafted six feet from the ground. I have forty trees of Greenings, ten of Nurseries, four of Baldwins, five of Roxbury Russets, one of Shaker Russets, three of Gillyflowers, one of Seek-no-further, two early Greenings, two Winter Sweets, besides several choice varieties of early

apples. A part of the trees stand on loamy, and a part on sandy soil. Being much neglected, I received little benefit from them until six years ago. The land has never been ploughed, and was manured but little until 1850, when I covered it with saltpetre dirt from under my barn, and chip manure. I turned the soil over around the trees to keep it loose, and to prevent mice from gnawing them; and scraped the bark to keep off insects. That year I gathered one hundred and thirty bushels of winter fruit, besides several bushels of fall apples. My winter fruit I valued at sixty dollars, and cut two crops of hay, one ton and three-quarters per acre, the first mowing, and one ton the second. Two years before I sold forty bushels of apples. This method of treating my orchard I find to be quite beneficial. My trees this fall are in a thrifty condition, and I have gathered from them, nearly three hundred bushels of apples.

Elijah Boltwood's Statement.

My orchard, which is in two locations, contains one hundred and fifty trees. They are all from my own nursery, and have been planted from fifteen to twenty years. They stand in good soil, but have had no extra culture. They contain a great variety of choice fruits; such as Rhode Island Greening, Roxbury Russet, Summer Golden Sweets, Winter Tolman Sweet, R. I. Sweet, Scotch, Lafayette, and Boston Russet, Congress Apple, Pumpkin Sweet, Cathead, Spitzenburg, Early Sweet Bough, Red Pippin, Oyster Bay, Crow's Egg, Shop Apple, Seek-no-further, Tabor Sweet, Tartar Apple, Leather Coat, Widow Paine, Porter Apple, King Apple, Peck's Pleasant, Royal Pippin, Burt Apple, Sawen Sweeting, Baldwin, Pomegree, Jenneting, Golden Kennet, Siberian Crab Apple, and many others, names unknown.

I have gathered from them this autumn, 150 bushels of good winter apples, and 220 bushels of cider apples.

Swine.

Pork making is one of the useful arts. The most desirable breed is the Suffolk, crossed with our best native. Mr. Graves, of Sunderland, exhibited a fine specimen. The good hog will have certain well defined marks, or points. His bones will be small, his joints fine, his legs short, his breast broad, with depth and elongation of body, and activity of carriage. His sty ought to be kept clean and dry, and be constantly supplied with clean straw. It should be about seven or eight feet square, with an open yard, about ten feet square. Swine should be supplied daily with water. Foul feeding and over feeding are very injurious. Spring pigs, if fed on the slops of the dairy, with a little provender mixed in, until September, may be fed in addition, for six or eight weeks, with apples and potatoes boiled together; and afterwards, until slaughtered, with corn or boiled meal. Grinding and cooking effects a saving of grain, about one-third. Indian corn is the most useful in feeding and fattening hogs; and may be well employed, in connection with vegetables. The difference between shelled corn and meal, appears from an experiment by Mr. J. E. Dodge. One of his pigs was fed with shelled corn, and supplied with plenty of pure water, and showed a gain of only five pounds of pork for every fifty-six pounds of corn fed out. Another pig, fed on Indian meal, mixed stiff with cold water, showed a gain of six pounds and three-quarters for every fifty-six pounds of meal fed out.

Economical farmers have found the expense of raising pork to be from five to six and a half cents per pound. Where nothing is made on pork, however, the profit is in the manure, if the sty be kept supplied with litter, muck, &c. Experiments have shown a material increase of the corn crop, from the use of hog manure. An acre of corn planted with hog manure, will yield twice as much as when planted with barn-yard manure. The manure of ten bushels of corn, made by swine, if carefully saved and applied in the hill, will add five bushels to the crop.

The slaughter of swine is often accompanied with refined cruelty. Were the hog first knocked in the head, and thereby

rendered insensible, he would be a passive victim in the butcher's hands. This humane custom of knocking him on the head, before cutting his throat, is rapidly gaining ground in our country. May it supplant the barbarous practice of plunging the living hog into boiling water, and even scraping off his bristles and disembowelling him while yet sensible.

Respectfully submitted,

J. W. Boyden, *Chairman.*

Compost Manures.

Two entries were made; one by William P. Dickinson, to whom was awarded the first premium, of eight dollars; the other, by Royal W. Smith, to whom was awarded the second premium, of four dollars.

Your committee were in doubt how to award these premiums. Had there been two premiums of eight dollars each, we would have awarded one to each competitor, with a "good will;" for we consider them both highly meritorious, and about equally so. We say to them both, "Go on, you will be rewarded, and you will benefit your neighbors. You are fast finding out how to raise corn at a diminished cost. We see distinctly, and beyond the possibility of a mistake, that the corn on these fields has cost you but about half as much as the corn on many fields in your neighborhood; and we confidently believe that by means of your composts you are not only not abusing your soils, but are essentially amending them for long years to come. When all farmers will manage their lands as you are managing yours, then will come the golden age of agriculture, and you may enjoy the satisfaction of feeling that you have contributed to usher it in."

Mr. Smith's mode of composting manures has been tested for a longer time than Mr. Dickinson's, and he has this year grown a larger crop with it. For these considerations, we were inclined to award him the first premium. But Mr. Dickinson has raised a crop of fifty or more bushels per acre, on eight acres of land, which was so covered with moss, and so unpromising in all respects, that few men would have said that

corn could be grown upon it at a living profit; and he has done it at a great profit. He has demonstrated, that just such sick lands as these, which he has purchased within a few years, can be cured, and be profitably cultivated, at a far higher price, per acre, than they have been held for years past. We suppose, therefore, that every owner of such lands is a debtor, or, in other words, is benefited by such knowledge as Mr. Dickinson has developed. These are some of our reasons for awarding to Mr. Dickinson the first premium. We have read Prof. Norton's letter to Mr. Dickinson, and we deem it not out of place here to say, that it makes us feel more than ever the great loss which the farmers of this country have sustained in the death of such a man.

William P. Dickinson's Statement.

I offer for your consideration the following statement, in regard to oyster-shell lime, as a manure.

In the fall of 1851, I had a sample of nine acres of soil analyzed, and found that it was very deficient in lime, (there being only three one-hundreths of a pound in one hundred pounds of soil.) I was advised to use shell lime plaster for sulphuric acid, and a little salt, for chlorine.

After spreading and harrowing in a compost, of ten loads to the acre, upon the whole field, I made a mixture of ten bushels of lime, two and one-half of plaster, and one-half bushel of salt, to the acre, and put a large handful in each hill, before planting. I left two rows together, in different parts of the field, to see the result. So great was the difference during the early part of the season, that the rows which were not limed, could easily be selected by their golden color, compared with other rows by the side of them, and at the time of harvesting, (when your committee saw it) the difference was so great, that the rows which were not limed could be selected from the others, as well as if there had been a stake driven at each one; the stalks and the ears were small, compared with others. The difference was estimated by good judges to be from one-fourth to one-third in favor of the rows which were limed. I likewise sowed some lime in the middle of a piece of grass. At the time of mowing, the quantity of grass was double, and the

spot can easily be selected now, by its fresh, green appearance, compared with that by the side of it.

I will merely say, that the lime cost seven cents per bushel, in New Haven, and the freight was about five cents per bushel — making about twelve and a half cents, in Northampton.

Hadley, Sept. 30, 1852.

Royal W. Smith's Statement.

During nine or ten years past, I have composted manure, and find it equal in value to yard manure, and better for corn. I usually make fifty loads. I draw out twenty-five loads of muck to the field, where I propose to raise my corn crop. This is done in the fall. I draw, about the 1st of April, twenty-five loads of yard manure, to the muck heap. I add fifty bushels of lime and five hundred pounds of plaster. I mix these ingredients as soon as the frost is out of the ground in the spring, to make the compost. As soon as the heap begins to warm, I pitch it over, to prevent burning, and the compost will be ready for use, by the time it is wanted for planting. The manure will be well rotted and fermented. I have never failed of a good corn crop, with this compost.

Hadley, Oct. 25, 1852.

It will be perceived by Mr. Dickinson's statement, that he put ten loads of manure on each of his eight acres. This, he informed us, was composted of five loads of yard manure and five of swamp muck. The two rows, here and there, on which this manure only was put, produced, in the opinion of your committee, at the rate of not over 18, or at most, 20 bushels of corn to the acre; while we judged that the corn which was treated to the handful of lime, plaster and salt, would give from 50 to 60 bushels. Our opinion on the latter, it since appears, was not too high, as Mr. Dickinson assures us he has husked the corn on precisely one acre, and it yields 126½ bushels of ears, which would give quite up to our highest estimate of shelled corn.

With regard to Mr. Smith's statement, your committee would suggest, that the lime used was not pure lime. It was

of a kind which he obtains for about half the price of pure lime. With this impure lime, containing as it does, nearly 50 per cent. of sand and other impurities, Mr. Smith's mode of adding the lime at the same time with the yard manure, may be well, and certain it is that he has succeeded with it admirably. He has satisfied us, that with ten loads of this compost in the hill, and five loads of yard manure harrowed in, he has this year grown 90 bushels of shelled corn to the acre. We would, however, advise him, if he were using strong, pure lime, not to bring it at first in contact with his yard manure, but to compost it the previous autumn with his swamp muck, and then to mix it, thus composted, with the yard manure in the spring. This would probably be the safer course; though there is not much danger of driving off the ammonia from manure by adding lime, if peat or swamp mud be added at the same time; for while the lime would drive off the ammonia, the office of the peat or mud is to rise upon it and to hold it fast; and we dare not say positively but that Mr. Smith's mode is the best, especially as he has tried it thoroughly and been successful. At any rate, it would not be well to put lime with yard manure, without adding peat or mud, at the same time, nor without forking it over, to keep it, as Mr. Smith says, "from burning."

The land on which Mr. Smith has grown 90 bushels of corn to the acre is of an excellent quality. That of Mr. Dickinson we have before described. We will now add, that we think it quite as meritorious to grow 60 bushels on such land as Mr. Dickinson's as to grow 90 bushels on such as Mr. Smith's.

All which is respectfully submitted,

J. A. Nash, *Chairman.*

BERKSHIRE AGRICULTURAL SOCIETY.

The forty-second anniversary of the Berkshire County Agricultural Society, was celebrated on the 6th and 7th of October, at Pittsfield. It was, in truth, a jubilee to the farmers of the county. They felt that the seasons had been propitious to most of their crops. The drought, it is true, had pinched and diminished the grass crop, but the potatoes, the staple of Berkshire, had escaped the blight of former years, and other crops were very good. The competitors for the premiums offered on the various crops, fruit orchards, &c., was great, generous, and noble, among the members of our society.

The show of cattle was also good. The numbers and great variety of sheep added much interest to the exhibition. The exhibition of horses, especially in the department of mares and colts, exceeded by far, anything of the kind we have ever had. Many varieties of poultry added great interest to the show. The increasing numbers, and greater variety of stock that our fairs are bringing on the ground for exhibition, make it necessary to arange the grounds so that the stock can be more thoroughly classified for the convenience of the committees. In the town hall the exhibition was highly satisfactory. Butter and cheese were there in so many parcels, and in such perfection, that the committee could hardly agree on whom to bestow the premiums.

Fruits were there in such variety and abundance as to astonish Berkshire people, and rebuke them too, for their want of faith in the adaptedness of Berkshire soil and climate to the best varieties. It is hoped that the society may soon have a more capacious hall for the display of domestic fabrics, fruits,

agricultural implements, &c. On the second day the ploughing match came off on the Foot farm, attended with the usual interest and excitement. At 11 o'clock the members met in large numbers at the Berkshire Hotel, and moved in procession to the Baptist Church—the use of which was kindly tendered to the society—to enjoy the usual exercises. The pulpit services were performed by the Rev. Mr. Dasheill, of Stockbridge. The singing by the choir of the church was very acceptable.

Great disappointment was felt at the failure of Dr. Lee, of Washington, who was to make the address. The time was well occupied, however, by Dr. S. Reed, editor of the Culturist, and Mr. Proctor, of Danvers, agent of the State Board of Agriculture. Their remarks were very interesting and instructive. The reports were then read, and premiums awarded. The society partook of excellent dinners, on Wednesday at the United States Hotel, and on Thursday at the Berkshire.

Much credit is due to the marshal, Col. Willis, and his assistants, and the police of Pittsfield, for the excellent order that prevailed both days.

E. H. KELLOGG, *Secretary.*

Ploughing.

The committee on the ploughing match having concluded the duties assigned them, ask leave to submit the following report:

They regard the plough as the chief implement, and ploughing the prime operation in tillage—husbandry. Both should be perfect, in order to perfect cultivation by the modes now in use.

As the stores of fertility, deposited by the forests of centuries, become exhausted, and other resources of fruitfulness requiring labor and art, are employed, more careful and skilful modes of husbandry are demanded, and the earths and elements of vegetation, artificially supplied, are to be wrought together and intermingled with increased knowledge and care. In this process, no substitute has been found for the plough—no motive forces, better than oxen and horses, and nothing to

supply adequately, the place of human hands. The plough has been brought to such perfection, in strength and structure, that an apology for bad ploughing can be found only in bad teams and bad land. And surely time enough has elapsed for great improvement, since "Ceres taught Triptolemus agriculture," and "All the Israelites went down to the Philistines, to sharpen every man his share and his coulter."

The most exciting part of our annual exhibition of produce and workmanship, is the amicable rivalry of the ploughing match. The great number of the intelligent of both sexes in attendance upon this rival exhibition of skill and dexterity, clearly shows that they appreciate its benefits, and that it has a value and consideration beyond the mere achievements of victory. It is quite as important to educate good ploughmen as good lawyers and physicans; nor is the ploughman's business any the less respectable because there are no scientific principles formally laid down, and very few precepts found in the books for its practice. The working oxen on the field were fine, the horses were unusually good and substantial farm horses; and as horses of this character, are, in some parts of the country, superseding oxen, the committee are happy to notice that greater attention is being given to them. Depth of furrow not less than six, and width of slice not more than twelve inches, were prescribed by the rules of the society. This regulation was carefully observed,—whether it be suited to all soils—and if not, to what, your committee were not called upon to determine. To the execution of the work only was their attention directed, and the awards reported are based upon the manner in which the work was done.

It is usual for committees upon ploughing to report that they find it very difficult to settle the relative merits of competitors. There is strict truth in this, and the difficulty is becoming every year more perplexing. Fifteen years ago it was comparatively easy to discriminate. No two workmen ploughed alike; such improvements have been made since then, producing such uniformity as renders it almost impossible to detect any material difference in the work of competitors. Your committee were of one mind, that all the lands struck out were remarkably well ploughed. Better ploughing is hardly conceivable. The boys, half grown, were as tall as the

men of full stature; and we were struck with admiration at the adroitness and dexterity of a lad of fifteen, son of Dr. Jacob Burghardt, of Great Barrington, who handled the plough with the expertness of a veteran in the business.

Your committee report the following awards:—

On ox teams.

Freeman Bates, of Pittsfield, 1st premium, . .	$7 00
Edward Clark, " 2d " . . .	6 00
Asa D. Howland, of Lenox, 3d " . . .	5 00
Collins Warner, of Pittsfield, 4th " . . .	4 00
Jonathan Baldwin, of Great Barrington, 5th premium,	3 00
Wm. H. Burghardt, of G't Barrington, 6th premium,	2 00

On horse teams.

George S. Willis, of Pittsfield, 1st premium, . .	$7 00
Joshua R. Lawton, Jr., G. Barrington, 2d premium, .	6 00
James N. Strong, of Pittsfield, 3d premium, . .	5 00
Horatio N. Tuttle, of Sheffield, 4th " . .	4 00
Andrew Baldwin, of Great Barrington, 5th premium,	3 00
David L. Pratt, of Sheffield, 6th premium, . .	2 00

Your committee award a reserved premium of $5 to Dr. Stephen Reed, of Pittsfield, for "a worthy exhibition of experimental ploughing," with a plough called by the Doctor "the Michigan soil and subsoil plough." One of your committee, who has used it, and carefully attended to its operations, expresses the conviction that it is admirably suited to many of our Berkshire soils.

H. W. Bishop, *Chairman.*

Grain and Root Crops.

The committee on agricultural productions have attended to the duty assigned them and offer to the society the following report. The whole number of crops entered for premiums is 192, the most of which we have examined; a few have been withdrawn. It is the opinion of the committee, that the interest manifested by the farmers of Berkshire, to build up, support and sustain the society, is by no means abated, but on

the increase, as must be evident to all who have an eye to see, or an ear to hear. The committee were called upon to examine crops from the extreme north to the south line of the county, a section of country not surpassed by any of equal extent in New England, for enterprise, production, health and fine scenery. It was evident to the committee, as we passed along the valleys of the Housatonic and Hoosic rivers, that a commendable spirit of improvement is abroad in our county, extending from the slope of the mountain top across the widespread plain below; all of which were dotted with fine fields of grain, with but occasionally a partial failure, caused by the early drought.

The hay crop this year is not equal in quantity to that of last, but as nearly as we can ascertain, about one-third deficient, but the quality is far better, which will help the deficiency very much.

Of corn, about fifty pieces were entered. Seven were competitors on three acres, the remainder for one. Here the farmers contended nobly, each one meaning to have the best crop in the county, which is as it should be. The crop may be considered a fair one; some parts, however, were affected by the drought, but in our opinion, there will be no want of grain for the consumption of man and beast, in Berkshire county, this year.

The field of corn entered by the president, Justus Tower, of Lanesborough, was a good one. It was evident to the committee that it had been managed by a skilful cultivator of the soil, the crop bearing testimony to the fact. Upon this field an experiment had been made with several kinds of manure of "compost variety," differing materially from each other, and as a statement respecting the treatment of the crop will soon be published, your committee deemed it unnecessary to enter it at full length in their report.

The oat crop, of which thirty pieces were entered for premium, were not of as great growth of straw as last year, but were well headed and will yield a fair crop in the north part of the county. It was evident that the south part of the county had suffered more by the early drought, which affected the crop materially.

Ten fields of meslins were entered, some of them first

rate, others not as good; like the oat crop, injured by the drought.

Quite a number of entries were made of barley, the most of which were good, and some were very heavy and of great growth, well filled, berry plump and fair.

Three entries were made of peas, which promised well at the time of viewing.

A large number of pieces of buckwheat were entered, all of which were very good, consequently it was a difficult matter to decide as to the premiums.

Potatoes.—Eleven crops were entered, and not one poor piece but all very good. We saw no signs of any rot among all the pieces and varieties viewed. The farmers appeared to be the best pleased with this crop of any we were called to view, as it appeared to remind them of by-gone days.

Turnips.—The committee were authorized to award $8 on the various turnip crops. Eight entries were made, all looking fine.

In the reports of former committees, much has been said respecting the fine, neat and commodious dwelling-houses lately erected in the county, and the noble and convenient barns, &c. Upon this we shall not enlarge, but do say, the half never was told us.

We were highly gratified and noticed with pleasure, the increased attention which is now being paid to the cultivating of choice fruits in the county, and had the pleasure of testing the qualities of several varieties of pears and plums, and also of peaches, quite a number of which would not suffer in comparison with those brought from the peach-growing district of New Jersey.

Orchards.

The whole number of orchards entered was fourteen, most of which were in fine condition and looked well. Quite a goodly number of them were taken from the nursery of the Hon. William Williams, of Stockbridge, and were of fine form, healthy appearance and vigorous growth. It was evident to the committee, that trees taken from the nurseries in the county,

are much better adapted to our soil and climate, more likely to live and flourish, than those taken from the far-famed nursery of Rochester; and we would recommend to those gentlemen about to plant out orchards, to patronize those gentlemen in our county who have been at great expense in starting their nurseries. They should be sustained by the farmers of Berkshire; for we are of opinion, that as fine apples, pears, peaches, plums, and many of the smaller fruits, can be cultivated here as successfully perhaps, as in any part of Massachusetts.

The orchard entered by J. Stevens, of Sheffield, did not come under the rules of the society, being planted previous to 1849. The committee regret exceedingly that it is not in their power to award the gentleman a premium. This orchard contained 108 trees, all of them grafted fruit, comprising forty varieties of the choicest fruit, and it is the opinion of the committee, that 500 bushels of apples might have been taken from it at the time we viewed it, but having no surplus funds in our hands, we would recommend to the society to award a premium of $5 to Mr. Stevens, for the spirit he has manifested in the cultivation of good fruit.

Wheat.

The crop of winter wheat was good. Nine pieces were entered for premium; the most of which was of fair growth, and will well pay the farmer for capital vested, and time and labor spent in raising this noble crop. The fields entered by J. L. Cooper, of Sheffield, and Benjamin Baldwin, of Egremont, would bear a fine comparison with the far-famed wheat fields of the West.

Of spring wheat, there were twelve entries. Here your committee found it very difficult to decide upon the best piece, a number exceeding any we ever saw before, being of an astonishing growth, ascertaining, also, that it filled well, and yielded bountifully.

Winter rye is good throughout the county, having a fair growth of straw, long and well filled heads, which bespeak a good reward to the farmer for his labor. There were fifteen entries, all of which were worthy of premium.

In our tour around the county, we saw many farmers engaged in moving large quantities of muck from the swamps to their yards and pens, for the purpose of increasing their compost heaps, with very little trouble and expense, in converting it into a valuable manure, which may be considered, in the true sense of the word, the capital stock of the farmer. We hope the farmers will bestow more attention upon this branch of farming, as we believe it to be invariably the case in every part of the county where the attention of the farmer has been turned to this important subject, viz.: the manufacturing of manure from muck, and repairing of ditches, you are sure to find good crops, a well cultivated farm, the crops upon it bearing testimony that they have been well cared for, and of course make good returns to the farmer for his labor and capital vested; but where this indispensable requisite is omitted, you will most surely hear the farmer complain that he can never get a premium on his crops, but his neighbor is always a successful competitor, the reason being obvious, but he does not see it.

In conclusion, your committee would not be unmindful of the kind reception they met with in every section of the county they had occasion to visit, and those families whose hospitality they shared largely, will please accept our sincere and hearty thanks. We award,—

For the best acre of winter wheat—

1. John L. Cooper, of Sheffield, . . . $6 00
2. Benjamin Baldwin, of Egremont, . . . 4 00

For the best acre of spring wheat—

1. Walter Richards, of Lenox, ... 6 00
2. J. H. Chapin, of Sheffield, ... 5 00
3. William Williams, of Stockbridge, . . 4 00
4. Nathaniel Cook, of Richmond, . . . 3 00
5. Reed Mills, of Williamstown, . . . 2 00

For the best acre of winter rye—

1. Samuel Lewis, of Great Barrington, . . 6 00
2. John Partridge, of Pittsfield, ... 5 00
3. Marshal Brace, of Stockbridge, . . . 4 00
4. Paul S. Palmer, of Stockbridge, . . . 3 00
5. Enos Smith, of Stockbridge, ... 2 00

For the three acres of corn in one field—

1. Orin Curtis, of Sheffield, ... $6 00
2. Clemmont Harrison, of Adams, . . . 5 00
3. Crocker Thatcher, of Lee, ... 4 00

For the best acre of corn—

1. Marshal Butler, of Lenox, ... 5 00
2. Henry D. Palmer, of Stockbridge, . . . 4 00
3. Ezekiel R. Colt, of Pittsfield, . . . 3 00
4. Charles Hinckley, of Lee, ... 2 00

Extra premium to Thomas Wood, of Egremont, 2 00

An extra premium of two dollars, to T. Taylor, of Pittsfield, for a fine piece of corn, ripe and fair, ... 2 00

To George Powel, of Lanesborough, for a piece of corn, hoed by a boy nine years old, an extra premium of 1 00

For the best acre of oats—

1. Gustavus Dunham, of Pittsfield, . . . 5 00
2. Charles Bush, of Stockbridge, . . . 4 00
3. Franklin Tobey, of West Stockbridge, . . 3 00
4. James E. Kellogg, of Sheffield, . . . 2 00

For the best acre of meslins—

1. E. C. Carter, of Stockbridge, ... 5 00
2. Luther S. Butler, of Lenox, ... 4 00
3. Henry Colt, of Pittsfield, ... 3 00
4. Henry Werden, Jr., of Richmond, . . . 2 00

For the best acre of barley—

1. Joshua Tillotson, of Lanesborough, . . 5 00
2. Seymour T. Coman, of Pittsfield, . . . 4 00
3. Albion P. Bagg, of Lanesborough, . . 3 00
4. Franklin H. Gaston, of Richmond, . . 2 00

For the best acre of peas—

1. John R. Tillotson, of Lanesborough, . . 5 00
2. D. E. Deming, of Williamstown, . . . 4 00
3. Nelson Joyner, of Egremont, . . . 3 00

For the best acre of buckwheat—

1. William H. Nichols, of Richmond, . . 4 00
2. Levi Butler, of Lenox, ... 3 00
3. William Goodenow, of Lanesborough, . . 2 00

To George S. Willis, of Pittsfield, extra premium, 2 00

For the best acre of potatoes—

1. D. A. Bulkley, of Williamstown,	$5 00
2. Edson Sexton, of Stockbridge,	4 00
3. Leonard Tuttle, of Sheffield,	3 00
4. Eli Bradley, of Lee,	2 00

For the best one-fourth acre of carrots—

1. Mark Laird, of Great Barrington,	3 00
2. Benjamin Hull, of Stockbridge,	2 00
3. E. Joyner, of Egremont,	1 00

For the best piece of turnips—

1. R. Colt, of Pittsfield,	2 00
2. William Williams, of Stockbridge,	2 00

This crop grew where Canada thistles have reigned predominant twenty-five years.

3. D. Kendall, of Lenox,	2 00
4. Charles Thatcher, of Lee,	2 00

For the best grafted apple orchard of not less than fifty trees, planted since October 1st, 1849, that has not taken a premium—

1. C. Carter, of Stockbridge,	8 00
2. Orin Curtis, of Sheffield,	6 00
3. Justus Tower, of Lanesborough,	4 00

All which is respectfully submitted,

HENRY SMITH, *Chairman.*

Accompanying the entry of winter wheat, for which the first premium was given, was the following statement:—

John L. Cooper's Statement.

Soil, a fair mixture of clay and loam; mowed the year previous, yielding 1½ ton of hay per acre. Ploughed only once, six inches deep; sowed the first week in September, one and a half bushels of Soule's wheat. Seed sown without any preparation.

On spring wheat, the first premium was given to W. Richards, of Lenox, for a piece of Italian wheat. On a gravelly soil, which last year was manured with 20 loads of barnyard manure to the acre, spread on and ploughed in five inches deep,

and planted with corn. It was sowed this season the 2d day of May, 1½ bushel to the acre.

Second premium to J. H. Chapin, of Sheffield, from whose statement it appears that the soil was a clay loam, on which the last year 25 or 30 loads of straw manure was spread and ploughed in from seven to eight inches in depth, and that the crop was eighty bushels of corn. No manure was applied the present season. It was sowed with two bushels to the acre of Tea wheat, the 3d of May.

Third premium to Gen. William Williams, of Stockbridge. The soil a loam; 75 bushels of corn per acre last year; 25 cart loads of manure per acre last season. The 20th of April the hills were split, then harrowed and ploughed clean. Two or three days after, harrowed and sowed two bushels Black Sea wheat to the acre. Seed sowed dry, without any fertilizer.

Fourth premium to Nathaniel Cook, of Richmond. The soil was a mixture of clay and gravel, mowed the year before the last. It was ploughed last year once, eight inches deep. Manured with 20 ox cart bodies full of new manure, harrowed in, and ten loads put in the hills, and planted with corn. The growth was large, but the corn not very sound. For the present crop, no manure was used. The land was ploughed once. Two bushels of Black Sea wheat, soaked in lime water and brine, and rolled in plaster until dry, was sowed the 8th day of May, and the ground harrowed three times thoroughly.

The next premium to Reed Mills, of Williamstown.

Reed Mills's Statement.

I enclose a statement of the process of cultivation and manures and fertilizers used and applied to our wheat crop, which was examined by you and the other gentleman of the committee the present month.

In the spring of the year 1849 the ground was manured at the rate of 15 two-horse wagon loads of barnyard manure per acre, ploughed and planted to corn, and plastered two or three times in the course of the summer. In the spring of the year 1850 the ground was ploughed well and sowed to oats; no manure or fertilizer of any kind was used this year. The above crops were rather more than middling for those years. Seeded lightly to clover, in the spring of 1851. No manure of

any kind was used; the clover was permitted to grow till the 4th of July, and then mowed. We had a yield of $1\frac{1}{2}$ ton per acre.

In the spring of 1852 the ground was ploughed once, and subsoiled, harrowed before sowing, and then manured with compost manure at the rate of ten loads per acre, sowed and harrowed. Nothing further was done to the crop from the time of sowing until examined by the committee.

The soil is a sandy loam. One and a half bushel of Mediterranean wheat was sown, broadcast, to the acre, the 1st of May.

I am confident that my wheat the present year is a greater growth, and will yield more per acre than my wheat crop of last year, which was $28\frac{3}{4}$ bushels per acre. And what makes it still more interesting to me is, that more than seventy-five years ago, it was cleared by my father, and upon this same wheat field the first log dwelling was erected, and constituted his only dwelling for quite a number of years.

Butter and Cheese.

The committee appointed to examine the specimens of butter and cheese offered for premium, report that the total number of entries for the society's premiums on butter is believed to have been larger than at any previous exhibition since the organization of the society, in 1811. There were forty competitors for the prizes. The superior quality of *all* the butter, and of the eleven specimens of the cheese inspected, reflected much credit upon the Berkshire dairies, and rendered it exceedingly difficult for the committee to decide in regard to the most deserving. The committee award

For the best 100 lbs. of cheese—

1. Seymour T. Coman, of Pittsfield,	$5 00
2. John B. Wells, of Cheshire,	4 00
3. Mrs. John H. Jordan, of Williamstown,	3 00
4. Mrs. Eliza Morrison, of Monterey,	2 00

For the best 25 lbs. of butter—

1. Mrs. Jerome Hulbert, of Pittsfield,	5 00
2. Mrs. Levi Childs, of Pittsfield,	4 00

3. Mrs. James Meacham, of Williamstown, . $3 00
4. Mrs. Lydia J. Shepherdson, of Lanesborough, 2 00

The committee tasted some good vinegar, exhibited by Mr. William M. Murray, of Lenox, contained in a vessel which bore this label:—"A vinegar plant, from which the best of vinegar may be made in four weeks, without the use of cider, with two cups of molasses to one gallon of water."

Some excellent specimens of maple sugar were offered by Peter Goodell, Jr., and John F. Powell, of Lanesborough; Porter Smith, of Lenox, Elias Cady, of Dalton, and L. L. Darling, of Pittsfield. The committee recommend that there be awarded to Mr. Goodell, for the best specimen, a gratuity of $2.

Respectfully submitted,

R. E. Galpin, *Chairman.*

Fruits, etc.

The committee on fruits respectfully represent, that if the award of premiums was to be an end of the matter, they should think any remarks on the subject of the specimens presented, wholly unnecessary. The heavy, symmetrical apples, with countenances glowing with health and perfectness; the melting, sensitive pears, which a mere pinch or cut would induce to dissolve in delicious tenderness; the deep-hued, downy plums; peaches, blushing with all the modesty that a "first coming out" would naturally awaken, and grapes, hanging in rich and seductive clusters, have all spoken their own praises,—the praises of their cultivators, and the high praises of Berkshire soil, and Berkshire sunshine, and of Berkshire rains and dews, which have given to them such beautiful growth and rich maturity.

They have said to all, in language too impressive to be resisted, "let it no longer be a proverb among you, that good fruits, in unbounded variety, cannot be raised all along your hill sides and on your mountain tops, as well as in your sheltered and beautiful valleys; for, as we teach you to say, such apologies are the result of sheer indifference, gross negligence, or unpar-

donable indolence,—or, what is worse, they may result from an unhallowed mixture of the three, which must form a sad and killing compound. But, dig deep, and enrich your soil; restore to it the productive properties that Nature gave, and man, in his greediness, has wrung from it. Plant fruits and ever-generous vines, and take care of them, and the offering of beauty and delicacy we present to your view to-day, will be an epitome of the every-day offering we will make to every household. It is true, the dispensations of Providence may sometimes blight your expectations with regard to us. Early or late frosts, which no man can hinder, may occasionally cut us off, for a single year. But such dispensations should teach you to prize healthful and agreeable qualities more effectually, and to extend our culture to greater quantities, and with more fixed care, with the assurance that, in a climate as favorable as yours, and in a soil in which industry can supply every defect, God and nature have done their part. It is only for man to awake from his lethargy and do his, and choice, healthful fruits will be as abundant as human desire is unlimited." We award—

For the best exhibition of apples,—

1.	David F. Goodrich, of Stockbridge, . .	$4 00
2.	Edward C. Carter, " " . .	3 00
3.	Joseph Stevens, of Sheffield, ...	2 00
4.	George B. Cook, of "	1 00

For an elegant display of apples, pears, quinces, and a rich show of dahlias, the society is under obligation to Mr. E. G. Studley of the Flatland Nurseries, Claverack, New York. For the interest Mr. Studley has given by this exhibition, we would recommend that a gratuity of $2 be given him, and if his trees are as superior as his fruit, we would commend his nursery to public patronage.

The grounds of the Young Ladies' Institute, as every one knows who has passed them, are laid out and decorated in a style of beauty and taste worthy of their appointment, and creditable to the skill, intelligence and refinement worthy of the principal of such an establishment. They are just as such grounds should be, natural, easy and agreeable in design, and those who are educated in the midst of their attractiveness,

cannot fail to receive impressions of rural beauty which will beautify their after lives.

From these grounds were exhibited an exceedingly rich display of table grapes. Though the clusters may not have been quite as large as those of Eschol, if our senses did not betray us, they were quite as good,—we think better; for they grew from our Berkshire soil, and were matured by Berkshire sunshine. May the same success attend the happy pair who inhabit this Eden, in all their efforts to cultivate the flowers and fruits of the earth, for which they are now so eminent in cultivating intellects of richer flowers and more enduring fruits, until they see a natural as well as moral and intellectual Eden, spreading under their influence. We recommend to them a gratuity of $1.

For the best and largest variety of garden vegetables—

1. G. C. Burnap, of Pittsfield, ...	$4 00
2. D. A. Bulkley, of Williamstown, . . .	3 00
3. Justus Tower of Lanesborough, . . .	2 00

For the best grass seed—

1. Levi Butler, of Lenox, ...	3 00
2. George B. Cook, of Sheffield, . . .	2 00

All which is respectfully submitted,

William Bacon, *Chairman.*

Milch Cows.

The committee on milch cows, report the number of cows entered as nineteen, most of which your committee called excellent animals. The competitors in all cases did not comply with the requirements of the society in presenting a written statement of the amount of milk and butter made the third week of June and September, and therefore could not be considered as competitors. We award the

1st	Premium	to Merrick M. Rice, Great Barrington,	$10 00
2d	"	" Henry Colt, of Pittsfield, . .	9 00
3d	"	" Henry Sabin, of Lee, . . .	8 00
4th	"	" Austin W. Kellogg, of Pittsfield, .	7 00

5th	Premium to	Luther S. Bitter, of Lenox, . .	$6 00
6th	"	" Benjamin Parsons, of " . .	5 00
7th	"	" Nelson Strong, of Pittsfield, . .	4 00
8th	"	" Henry Noble, of " . .	3 00
9th	"	" John E. Merrill, of " . .	2 00

All which is respectfully submitted,

WILLIAM E. JOHNSON, *Chairman.*

We give below an abstract of statements presented by the competitors for premiums :—

M. M. Rice's Statement.

Durham cow, seven years old, came in 2d of May. Third week in June, gave 386 lbs. of milk, which made 18¼ lbs. of butter. Seven days in September, 331 lbs. milk, and 15 3/16 lbs. of butter. Gave her four quarts of wheat shorts per day.

H. Colt's Statement.

She is eight years old, native breed; came in 1st day of May. Gave 271 lbs. 4 oz. milk third week in June; 176 lbs. 5 oz. milk third week in September. Made 17 lbs. 6 oz. of butter third week in June; 13 lbs. 8oz. of butter third week in September. Fed pumpkins and 4 quarts oat meal in September.

Butter made from the cow during the following months :

June, ...	59½	pounds.
July, ...	49½	"
August, ...	40¾	"
September, ...	38¼	"
Four months' butter, . . .	188	"

The cow was sick for ten days during the first part of September, which will account for the falling off of butter during the month.

H. Sabin's Statement.

Cow is six years old, part Durham; came in 10th of April. Gave 307 lbs. of milk from 13th to 19th of June; 241 13/16 lbs. from 13th to 19th of September.

	Morning.	Evening.	Total.
Sunday, June 13,	18 lbs. 12 oz.;	23 lbs. oz.;	41 lbs. 12 oz.
Monday, " 14,	16 " 12 "	25 " 8 "	42 " 4 "
Tuesday, " 15,	19 "	27 "	46 "
Wednesday, 16,	16 " 12 "	26 " 12 "	43 " 8 "
Thursday, " 17,	20 " 4 "	22 " 4 "	42 " 8 "
Friday, " 18,	20 " 4 "	26 "	46 " 4 "
Saturday, " 19,	17 " 4 "	27 " 8 "	44 " 12 "

Seven days, number of pounds of milk, 307

June 14, 15, and 16, set 72 lbs. 12 oz. milk, made 3 lbs. 10 oz. butter; 15 lbs. 4 oz. per week. 17, 18, 19, set 66 lbs. 12 oz. milk, made 3 lbs. 11 oz. butter; 16 lbs. 15⅓ oz. per week. First part of the week very warm; last part good weather for butter.

June 13, was drove three-fourths of a mile to very poor pasture; baited in door-yard at night; had a pail of swill from swill barrel night and morning. September 13. In meadow for one week, then turned back to my summer pasture, gave pail of swill night and morning. From some cause the cream did not rise as usual. Frosty nights had no fire near the buttery, that might warm the room, as will appear by the butter.

	Morning.	Evening.	Total.
Monday, Sept. 13,	16 lbs. 8 oz.;	18 lbs. 12 oz.;	35 lbs. 4 oz.
Tuesday, " 14,	15 "	17 " 4 "	32 " 4 "
Wednesday, 15,	16 " 12 "	17 " 8 "	35 " 4 "
Thursday, " 16,	16 " 8 "	17 " 4 "	33 " 12 "
Friday, " 17,	17 " 4 "	19 " 4 "	36 " 8 "
Saturday, " 18,	17 "	18 "	35 "
Sunday, " 19,	18 " 8 "	16 " 4 "	34 " 12 "

Seven days' milk, ... 251 lbs. 12 oz.

September, 13th, 14th and 15th, set 66 lbs. 12 oz. milk, and made 2 lbs. 8 oz. butter; 16th, 17th, and 18th, 66 lbs. 12 oz. milk, and made 2 lbs. 8 oz. butter; making 9 lbs. ½ oz. per week.

A. W. Kellogg's Statement.

Age of cow eight years, native breed; came in, May 27th. Third week in June, gave 56 lbs. 8 oz. milk per day. Third

week in September, gave 36 lbs. 9 oz. milk per day. From milk third week in June, churned three times, weight of butter, 14 lbs. 6 oz. From milk third week in September, churned at two different times; weight of butter, 11 lbs. 12 oz.

In June, was fed two quarts of meal per day, *dry*. Was drove to pasture one mile and a half. In September, was fed half bushel pumpkins night and morning, drove to pasture as above stated.

Luther S. Butler's Statement.

This cow was eight years old last spring, and of the native breed. She came in May 23d. Gave 295 lbs. of milk the 3d week in June, which made sixteen and one-half pounds of butter. The third week of September, she gave 224 lbs. of milk, which made sixteen pounds of butter. In June, no feed but pasture. In September, pasture and pumpkins.

Lenox, Sept. 29, 1852.

B. Parson's Statement.

Cow came in in May, and made $14\frac{2}{16}$ lbs. butter in 3d week of June, and 11 lbs. 3d week in September.

Nelson Strong's Statement.

June 15, 1852, $48\frac{1}{2}$ lbs. milk; 1 day butter, $2\frac{1}{2}$ lbs. July 15, $46\frac{2}{16}$ lbs. milk; 1 day butter, $2\frac{2}{16}$ lbs. August 15, $43\frac{5}{16}$ lbs. milk; 1 day butter, $2\frac{1}{16}$ lbs. September 15, $42\frac{1}{2}$ lbs. milk; butter 1 day, $2\frac{2}{16}$ lbs.

Henry Noble's Statement.

Age, seven years last spring; breed, cross of Aryshire and native; came in last March. Gave, the 3d week in June, $324\frac{1}{2}$ lbs. milk. Average, per day, $46\frac{1}{2}$ lbs. At one trial, $20\frac{1}{4}$ lbs. milk produced one pound of butter. Feed, good pasture. Gave, the 3d week in September, 266 lbs. milk; per day, 38 lbs. Eighteen and one-half pounds of milk to the pound of butter. Feed, meadow and pumpkins.

John E. Merrill's Statement.

The cow is six years old, of the Devon breed; came in the 1st of April. Gave 290 lbs. of milk in June, 165 lbs. in Sep-

tember. The milk in June I gave to my calves. In September she made, on an average, one pound of butter from twenty-one pounds of milk. She had pasture in June, and meadow in September. Feed, very poor, on account of the dry weather.

Pittsfield, Oct. 6, 1852.

Horses.

The display of horses was quite equal, if it did not excel, those of several preceding years. The number of mares and colts exhibited was twenty-five. Carriage horses, five; farm horses, five; single horses, ten; stallions, three.

The mares and colts were generally good—many of them worthy of much commendation; and we should have been glad to have spent more time in their inspection, could we have had it. If we have erred in our awards, we beg for forbearance. Could the whole society examine the mares and colts offered for premium this year, the committee entertain no doubt that they would not only freely grant the premiums now offered, but would regret, as the committee do, that they could not make more awards.

Your committee would not encourage too extensive a taste for fancy animals, but they cannot withhold their opinion, that too little care has been given in this county to the breeding and raising of horses. The difference in cost of the rearing of a horse worth from $150 to $500, and one worth from $50 to $80, is but a trifle. Most of our farmers are in the too common error, that a mare is too good to breed from until she is too old and unsound to be good for anything else. We have been shown some very good colts from such mares at this exhibition; but would not these colts have been much better, had the same mares brought them while in their prime and vigor?

Your committee would recommend that the society give premiums on yearling, two and three years old colts, as well as mares and colts, which, we think, would not only encourage the breeding of the horse more thorough, but be very conducive to the better matching of our matched horses. Provided

the premiums are small, we trust the community will be satisfied with them, and come cheerfully forward and compete for them. On the part of the competitors, the principal benefit is, not the taking the prizes, even were they much larger than those now offered. It is the bringing of the animals prominently to the notice of thousands of persons to whom they would otherwise never be known. This is an advantage distinct and truly independent of the awards of premiums. We award as follows:

For the best breeding mare, colt by her side—

1. Robert Pomeroy, of Pittsfield,	$6 00
2. Clark M. Percey, of North Adams,	5 00
3. John Gorton, of Hancock,	4 00
4. Amasa Rice, of Pittsfield,	3 00
We also recommend extra premiums to	
Henry Laxham, of Williamstown,	1 00
H. F. Morrill, of Lenox,	1 00
Charles G. Chapman, of Windsor,	1 00
J. V. Ambler, of Lanesborough,	1 00
Vassel White, of Stockbridge,	1 00
Joel Stevens, of Pittsfield,	1 00

For the best pair of farm horses—

1. George O. Peck, of Lenox,	7 00
2. Nathaniel Cook, of Richmond,	5 00
3. Frederick Washburn, of Lenox,	3 00

Carriage horses—

1. Nathaniel Kellogg, of Pittsfield,	7 00
2. Socrates Squier, of Pittsfield,	5 00
We recommend an extra premium to	
J. B. Freeman, of Lee,	2 00

Single horses—

1. M. M. Rice, of Great Barrington,	4 00
2. William Pollock, of Adams,	3 00
We recommend extra premiums to	
Charles Hinckley, of Lee,	2 00
Bradford Harrison, of Adams,	2 00
John L. Cooper, of Sheffield, exhibited a young mare, and Josephus Crafts, of Lee, a horse, both of which showed good style and speed, for which we recommend a premium to each, of	3 00

Stud horses—

1. No award.
2. Seymour Wilcox, of Lanesborough, . . $5 00

Timothy Hall, of Pittsfield, exhibited a stud colt, four years old, and R. R. Briggs, of Adams, one two years old, neither of which, in the opinion of your committee, were deserving of the premiums offered. Mr. Hall's being very much under size, and Mr. Briggs' too young to be considered a stud horse.

All which is respectfully submitted,

Edwin Bush, *Chairman.*

Sheep.

The committee on the third division of domestic animals have attended to the duty assigned them, and would respectfully report, that there were an unusual large number of sheep on the ground, there having been fifty entries in all—twenty-five of which were entered as grade—eight fine wool, eleven coarse wool, and six lots of fat wethers.

The committee were disappointed in finding so few fine woolled sheep on the ground, and would earnestly call upon the wool growers of Berkshire to make the exhibition in this department more respectable in future. Of their ability do so the committee have not the least doubt. The committee would also suggest to these same wool growers the propriety of making themselves better acquainted with the relative qualities of the different grades of wool before entering their sheep for premiums. The coarsest buck on the ground and several lots of coarse ewes were found entered as grade sheep. The committee award

For the best coarse wool buck—

1. Henry Dresser, of Stockbridge, . . . $5 00
2. Franklin Toby, of West Stockbridge, . . 4 00

For the finest wool buck—

1. Henry Werden, of Richmond, . . . 5 00
2. Alanson Janes, of Adams, ... 4 00

For the best grade buck—

1. George Butler, of Lenox, ... $5 00
2. Elias Werden, of Richmond, ... 4 00

For the best five coarse wool ewes—

1. Gen. Williams, of Stockbridge, (full blood Cotswolds,) 5 00
2. Edward S. Rowley, of Richmond, . . . 4 00

There were four lots of very beatiful fine wool ewes entered by William Goodenow, of Lanesborough, Amos Raymond, of Hinsdale, and Amos and Marshall Shepardson, of Lanesborough, but three of the competitors, having taken premiums at the last previous exhibition, are by the by-laws excluded this year.

For fine wool ewes—

1. Marshall Shepardson, of Lanesborough, . $5 00

For the best grade ewes—

1. Oran Farnum, of Lanesborough, . . . 5 00
2. Socrates Squier, of Pittsfield, . . . 4 00

For the best six fat wethers—

1. Andrew Baldwin, of Great Barrington, . . 5 00
2. Moses G. Tracy, of Richmond, . . . 4 00
3. E. Cady, of Hinsdale, ... 3 00

For a grade buck, to Jedediah W. Newton, of Lanesborough, an extra premium of 1 00

For some very good coarse wool bucks (which were entered as grade bucks), to William H. Burghardt, of Great Barrington, John F. Powell, of Lanesborough, and James H. Chapin, of Sheffield, each an extra premium of 1 00

The committee, in closing this report, would respectfully suggest to the society the propriety of making better arrangements for the future exhibition of sheep. The very promiscuous manner in which the different grades of sheep are mixed up with swine, breeding mares and colts, &c., &c., makes it extremely difficult for a committee to decide upon the relative merit of the competitors.

Respectfully submitted,

Henry C. Squier, *Chairman.*

Agricultural and Mechanical Implements.

The committee on agricultural and mechanical implements, report the following awards:—

To S. Reed & Co., of Pittsfield, for a fine display of agricultural implements, ... $3 00

To William K. Gates, of Lee, for spades, forks, &c., of great finish, ... 2 00

To John Webb, of Pittsfield, for a lot of joiners' planes and moulding tools, of superior workmanship, ... 3 00

To William H. Warner, of Richmond, for a washing machine, ... 5 00

These washing machines promise to be to the labors of the good housewife, what steam is to navigation. While the latter annihilates time and distance in crossing the ocean or in rushing across continents, the former throws the washing of a week, a fortnight, or a month, into a pastime of a few moments' duration, and gives the operator almost the entire day to devote to leisure, or such employment as fancy dictates. We saw the machine in operation;—dirty shirts were rendered entirely clean and pure in twenty seconds, and napkins in one-half of the time. When the merits of this machine are fully known, the response of blushing maidens to suing lovers will no longer be, "Do you take the papers?" but, Have you Miller's patent washing machine?

To H. W. Chamberlain & Co., of Pittsfield, for a drafting machine of great convenience and utility in architectural and mechanical drawing, and one which no good artist will omit to purchase, . . $3 00

To M. W. Stevens, for a drum of fine martial tones, and good finish, ... 2 00

To Stephen W. Halsey, of West Stockbridge, for a sugar mill, ... 1 00

To Martin Rees, of West Stockbridge, for a very fine fanning mill, well worthy of the attention of farmers, ... 2 00

To Nelson Tracy, for a set or horse shoes, . . 1 00

To John Volk, of Pittsfield, for two beautiful marble

monuments, "white as the driven snow," with some very fine specimens of parlor ornaments of alabaster purity. The design and finish of these monuments show that Mr. Volk has acquired a very high and enviable standing as an artist, and that those who have lost near and dear friends, will no longer need to send to Italy's sunny clime, nor even out of our own beautiful Berkshire, for monuments of the finest marble and highest finish, to perpetate the memory of their friends. . . . $5 00

To William Pierce, of Pittsfield, for a seraphine of rich tone and beautiful finish, ... 3 00

To C. B. Platt & Son, of Pittsfield, for hats, caps and furs, of extraordinary fine texture and finish, . 3 00

To Robert R. Briggs, of Adams, for a pair of horse collars, of new style and design, adapted to promote the ease and comfort of the horse in drawing, 2 00

All which is respectfully submitted,

GEORGE W. MEAD, *Chairman.*

HOUSATONIC AGRICULTURAL SOCIETY.

This society was incorporated by act of the legislature, on the 10th of April, in the year 1848. It had previously been organized some eight years as a voluntary society, and struggled into life with no aid from the Commonwealth, and attained comparative prosperity. Its character was then highly respectable. From three to five hundred dollars was annually contributed by the farmers of southern Berkshire, and distributed in premiums for the general encouragement of agriculture in this highly productive and beautiful section of the State. Since its incorporation it has acquired a high and permanent position, and fairly rivals any society in the Commonwealth. For the past year a greater interest has been manifested in its proceedings,—a greater competition has been exhibited in the honorable and manly strife for excellence, and the amount actually expended for premiums was greater than in any previous year.

The objects for which premiums have been offered appear in the reports hereto annexed, and made a part of this report and statement. The nature of the encouragement proposed by the society is agriculture in all its varied interests and objects,—to elevate the standard of agricultural labor and excellence, and contribute our influence, so far as it may extend, to make the farmer what God intended he should be—the noblest specimen of independence and manliness, and the best representative of humble toil.

During the past agricultural year great prosperity has prevailed among our agricultural population. The warm summer matured the various grains and grasses, the only *short* crop being grass, owing to the long drought in the month of June. No signs or appearance of the potato rot has yet developed

itself. It is believed that the true cause of this disease must be sought for among the secrets of atmospheric and meteorological changes, against which no precaution can effectually guard.

The exhibition of cattle, agricultural implements and products, fruits and flowers, and the products of the dairy and garden, was larger at our annual fair than ever before. The annual address, by Hon. G. P. R. James, was an able and eloquent production, favorably contrasting English husbandry, —with which he had great apparent familiarity,—with our own. He appealed to the agriculturists of the United States to do for the soil what they had done in the struggles for political prosperity and social happiness.

This society is happy to record the advances which have been made in agriculture, stimulated by the patronage of the State, and those intelligent and enthusiastic friends, who have incited interest and competition in the development of the hidden resources of the soil. Our farms are vastly improved in productiveness; swamps and barren hill side slopes have been redeemed from worthlessness, the various soils have been adapted to the requirements of superior culture, and the amount of crops has been doubled. Instead of thirty or thirty-five bushels of corn on an acre, no farmer here competes with his neighbor unless he feels assured of from sixty to eighty bushels. The harvest of the smaller grains have filled the garners, while the cultivation of the sugar beet, the turnip, carrots, &c., &c., has been successfully attempted. This society would recommend a greater attention to the cultivation of fruit. It is believed that the Housatonic Valley, with its warm alluvium, is admirably adapted for apples, pears, peaches, (in sheltered situations,) apricots, plums, melons, and cherries. The great majority of our farmers have heretofore paid little or no attention to scientific agriculture. They have been content to follow in the old beaten track of their fathers, and too often have contracted a prejudice against book-learned cultivators of the soil. This prejudice is wearing away.

Respectfully submitted,

ROBT. E. GALPIN, *President.*

CHAS. N. EMERSON, *Secretary.*

Agricultural Productions.

The committee on agricultural productions submit the following report. The society offered $163 to the successful competitors of agricultural crops. One hundred and sixty crops were offered for premiums; the most of them were examined, a few only being withdrawn. In passing through the several towns to which the committee were called in the discharge of their duties, in the valleys and on the hills, they found the spirit of inquiry abroad. A commendable interest in agricultural improvements was manifested. The farmers being no longer content with the old traditionary system of farming, were casting aside exploded notions and substituting something more rational and reasonable. Fully appreciating their influence, morally as well as politically, they *will* make their calling *honorable* as well as honest. Never were the prospects of this important class more encouraging than at the present time. Receiving the attention of scientific men, new theories are daily proposed and experiments tried. The influence of the farming interests will be felt beyond the limits of this Commonwealth. It has received an impetus that will carry it to the halls of Congress, imperatively demanding of the general government its attention. It will not stop here. Its progress is forward and onward. It will revolutionize peaceably the civilized world, and man will assert his inalienable rights.

The often-repeated question, "Will the Housatonic Society continue and prosper," is being answered. With an amount contributed by the State equal to that of any other society, with the voluntary donations of its members, furnishing the largest premium list in the Commonwealth for its dower, an enlightened and industrious population, possessing the valleys watered by the Housatonic for its inheritance, why should it not continue and flourish.

In accordance with the regulations of the executive committee, statements have been furnished by most of the competitors. This wise and salutary requirement, heretofore disregarded, was not generally understood; consequently many of the statements are not prepared with an intention for publication. This requirement should be persisted in. It is an important

end whereby knowledge may be disseminated. Its object once thoroughly understood, and its requisitions complied with, a large amount of knowledge will be given to the public. The subject of manures is receiving the attention of the farmers in Berkshire, as a means of improving their farms; fifty per cent. more manure is made and preserved for use now than fifteen years ago. Barns are being built with cellars under them, for the purpose of holding fast the liquids as well as solids, until wanted for use. Swamp muck is used successfully in compost, and separately, as a fertilizer. Samuel H. Bushnell, Esq., of Sheffield, has experimented with muck in raising corn, with great success, and we invite attention to his statement. Rotating crops has as yet received but little attention by the farmers in this vicinity. Col. Lewis, of West Stockbridge, is experimenting with rotation of crops with success. Mr. Lewis stated to the committee that he had increased the value of his corn crop one-quarter, by this system.

Underdraining is not practised as extensively as it should be. The committee believe that much of the land in Berkshire might be made to produce one-quarter more by removing the surface water. Whether deep or shallow drains are best must depend somewhat on the soil. The best materials for constructing, whether of stone, wood, or tiles, and many other questions, might be profitably discussed during the long winter evenings by farmer's clubs, or through the columns of the Culturist, much information might be disseminated. The committee would recommend to the members of the society this paper. Its able editor, Dr. Reed, is indefatigable in his labors to advance the farming interest, and ought to receive their patronage. The committee do not hesitate to pronounce it one of the cheapest papers published, and containing an amount of matter equal to many of the more costly journals. The committee will not here present the advantages of underdraining. Almost every farmer has small stone enough to construct sufficient underdrains for his land. The capital invested would be labor, and if any one doubts that it would be a profitable investment, let him examine the premises of Mr. Cyrus Baldwin, of Egremont. Mr. Baldwin has, within the last twenty years, constructed three miles of underdrain on his farm, with small stone. He has made his land, consisting of

a heavy clay subsoil, the most productive in town, and places once covered with stagnant water during the summer season, now as fertile as a garden.

The hay crop this season is a light one, not more than one-third of a crop in some places, being much injured by the drought. Fears were entertained for a while that there would not be the necessary amount of fodder to carry the stock through the winter. But those fears have been dispersed, and we are again assured that "He who tempers the wind to the shorn lamb," orders all things well. Forty pieces of corn were entered for premium. Seven were competitors for the premium on four acres, and the remainder for one acre. The crop is a fair one. The committee believe that as many premiums should be offered on four acres, or on a field of a given number of acres of corn, as on one acre. Of the cultivated crops this is the leading and decidedly the most important and profitable to the farmer in this county. It enters largely into the farmer's account of food, as the most economical and desirable extra grain for working oxen and horses, as food for beef cattle, hogs, sheep, dairy stock and poultry. Considering the comparative certainty of obtaining a crop under all the vicissitudes of season, it would be within bounds to say that fifty per cent. of the entire profits of our agricultural operations flow directly or indirectly from the production of Indian corn alone. Various opinions prevail as to the distance that the hills of corn should be planted from each other. The committee have examined fields containing from 27 to 64 hills to the square rod. The field of Marshal Butler, of Lenox, was planted 40 hills to the rod, twelve rowed Dutton corn, and yielded, by the committee's measurement, 136¼ bushels of shelled corn to the acre. The field belonging to Charles Hinkley, of Lee, contained just 36 hills to the square rod, rows crossing each other at right angles. Tillotson corn, and the dryest of any examined. The hills contained five stalks on an average. It was evident that Mr. Hinkley had taken much pains (as every farmer should do) in ploughing, marking, and planting his corn, and is rewarded with a good crop of sound corn, yielding, according to the committee's measure, 109½ bushels of shelled corn to the acre. The field of four acres of corn in Great Barrington, belonging to Orrin Curtis, of Sheffield, was a most

beautiful sight for the eye to behold. Twelve-rowed Dutton, 31½ hills to the rod, and yielding 125 bushels of shelled corn to the acre, all sound. The majority of farmers plant their corn too thick; 30 to 33 hills to the square rod of the twelve-rowed Dutton will give the greatest yield of corn; planting thicker will give mere stalks. Thirty-three to 36 hills to the rod of the Tillotson or any eight-rowed corn, will produce on an average a greater yield than if planted nearer together. From 20 to 50 loads of compost, or barnyard manure, is put on to the acre, and the average product varies from 30 bushels to 60 bushels to the acre. This being a staple crop with the farmers in this county, its growth should be encouraged.

Thirty-four pieces of oats were viewed by the committee. The growth of straw being very much injured by the drought, consequently not as large as in former years. This crop, in southern Berkshire, is almost invariably restricted to land that has grown corn or potatoes the previous year. It is generally considered a great impoverisher of the soil, and would be abandoned but for the small expense attending its cultivation, and the convenient time of sowing and harvesting, and grown upon ground that is generally stocked down with a crop of timothy or clover. Three bushels of seed to the acre is the quantity usually sown. Nine fields of winter wheat were viewed, all of them good and worthy of a premium. In consequence of the ravages of the fly in previous years this crop had almost been abandoned. From the successful experiments in wheat growing, the committee feel assured that the time will speedily come when the Berkshire farmers will no longer be dependent upon a foreign market for the staff of life. But three premiums were offered on this important crop, worthy of at least as many as oats or rye. The quantity of seed sown is two bushels to the acre. The field belonging to Capt. Baldwin, of Egremont, would not suffer in comparison with the wheat fields of the Genesee Valley, either in quantity or quality. His field, containing fifteen acres, yielding 282 bushels by measure, and 413 by weight, 60 lbs. to the bushel. A little extra labor in washing or soaking the wheat in brine, and liming, will prevent the smut. Eighteen pieces of winter rye were examined, all good, and promising an abundant harvest. The quantity of seed sown, 1¼ bushels to the acre.

Twenty pieces of potatoes were examined, the best in quality and quantity since the blight made its appearance in 1843. In planting this crop, one error is committed. The greatest yield not being found where there was the most hills to the rod. Twenty-seven to thirty-six hills to the rod is sufficient for a profitable yield. Mr. Lyman Huggins, of Sheffield, had 31 hills to the rod; yield, 92 quarts. J. R. Lawton, Jr., of Great Barrington, 33 hills, yield, 83 quarts. Mr. Lawton being entitled to a premium on another crop, could not receive one on potatoes. Mr. Elias Wright, of Monterey, 27 hills, yield, 81 quarts. Mr. Jay Shears, of Sandisfield, 25 hills, yield, 73 quarts. Fourteen pieces of buckwheat were examined, all good, much better than in some former years. This crop, generally sown as a chance crop, and being very uncertain, drought or early frost blasting it very often, the committee do not deem it necessary to offer very great inducements for encouraging its growth. The crops of spring wheat and barley were very fair. Several pieces of carrots were examined, some of them promising an abundant yield. The committee adjudged that the piece of Jared Mansir, of Monterey, would yield at the time of digging for winter 1,800 bushels to the acre. The committee would recommend to the farmers of the eastern towns, the growing of more roots. Perhaps it may be said that this season has been propitious for the soil of those localities, while in a wet season, the land being saturated with water, becomes heavy, thus rendering it unfit for the growth of roots. Underdrains would remedy this by carrying off the surface water. Ten vegetable gardens were examined; one in Sheffield, three in Egremont, three in Great Barrington, and two in Monterey. The committee, regretting, first, that they had not one at home as good, and secondly, that they had not a premium to give to each competitor, there being but $6 offered. Considering how large an amount of the subsistence of the family is, and may be derived from the garden, the small investment of cash capital, the largest share consisting in labor, thereby bringing it within the reach of all to compete that feel disposed, the committee do not hesitate to recommend an increase in the number and value of the premiums on vegetable gardens. Why should not the same encouragement be offered for cultivating the garden, as for an acre of oats or rye, corn or

potatoes? A large number of entries were made past the time fixed by the society, and some few after the committee had finished viewing. Such could not reasonably expect to receive the attention of the committee.

In conclusion, we offer our sincere thanks to those who so generously bestowed their hospitalities, of which we were the participators.

All which is respectfully submitted,

J. H. Rowley, *Chairman.*

Egremont, October, 1852.

Premiums.

The committee on agricultural products award as follows, to wit:—

For the best acre of winter wheat—

1. Benjamin Baldwin, of Egremont,	$6 00
2. Levi Boardman, of Sheffield,	5 00
3. F. Cooper, of Sheffield,	3 00
James Baldwin, of Egremont, an extra premium of	2 00

For the best acre of spring wheat—

1. Joseph Chapin, of Sheffield,	6 00
2. Joshua R. Lawton, of Great Barrington,	5 00
3. Nelson Joyner, of Egremont,	3 00

For the best acre of winter rye—

1. Charles Spurr, of Sheffield,	6 00
2. Norman Wilcox, of Stockbridge,	5 00
3. Jared Lewis, of Great Barrington,	4 00
4. Robert E. Galpin, of Stockbridge,	3 00
5. J. D. Burtch, of Sheffield,	2 00

For the best acre of corn—

1. Marshal Butler, of Lenox,	7 00
2. Charles Hinckley, of Lee,	6 00
3. Henry Smith, of Lee,	5 00
4. Stephen N. Karner, of Egremont,	4 00
5. Orange Smith, of Egremont,	3 00
6. Henry D. Palmer, of Stockbridge,	2 00

For the best four acres of corn, in one piece—

1. Orrin Curtis, of Sheffield,	10 00

For the best acre of oats—

1. Washington Bissell, of Great Barrington,	$6 00
2. Edson Sexton, of Stockbridge,	5 00
3. Edward Hulbert, of Great Barrington,	4 00
4. Merritt I. Wheeler, of Great Barrington,	3 00
5. Gorton Rice, of Egremont,	2 00

For the best acre of barley—

1. Morgan Lewis, of West Stockbridge,	3 00
2. S. P. Lincoln, of Stockbridge,	2 00

For the best acre of buckwheat—

1. Christopher French, of West Stockbridge,	5 00
2. A. C. Butler, of Lenox,	4 00
3. Freeman Houghtailing, of Great Barrington,	3 00

For the best acre of white beans—

1. Lorenzo H. Rice, of Great Barrington,	3 00
2. George Hollenbeck, of Egremont,	2 00

For the best acre of potatoes—

1. Lyman L. Huggins, of Sheffield,	6 00
2. Elias Wright, of Monterey,	5 00
3. Jay Shears, of Sandisfield,	4 00
4. Milo Hall, of New Marlborough,	3 00
5. Stephen Powell, " "	2 00

For the best one-fourth acre of carrots—

1. Jared Mansir, of Monterey,	3 00
2. Mark Laird, of Great Barrington,	2 00
3. E. N. Hubbard, of Great Barrington,	1 00
Edmund Joyner, of Egremont, an extra premium of	2 00

For one and three-fourths acre of carrots—

John Brewer, of New Marlborough,	2 00

For the best vegetable garden—

1. Rodney Hill, of Great Barrington,	3 00
2. Rev. G. Clark, of Egremont,	2 00
3. Edwin R. Joyner, of Egremont,	1 00

Benjamin Baldwin's Statement.

The field of wheat which I enter for premium, contains fifteen acres. Soil, clay loam. It was a pasture lot in 1851; had been seeded, two years previous, with clover, eight quarts to the acre. Ploughed, between the first and tenth of July,

about five inches deep; harrowed thoroughly. Ploughed again in August, and again the first week in September. Wheat sown the tenth of September, two bushels per acre. Seed soaked twelve hours in strong brine, and then rolled in quick-lime, about one bushel of lime to four of wheat. Think wheat is not as likely to smut when sowed in the above manner. I used twenty-five bushels of the Soule wheat, and five of the Mediterranean. Harvested the Mediterranean about the 20th of July, and the Soule ten days later. Yield, sixty bushels of the Mediterranean, weighing sixty-four pounds per bushel, and three hundred and twenty-two of the Soule, weighing sixty-five pounds per bushel, making three hundred and eighty-two bushels, by measure, and four hundred and thirteen bushels, by weight. I passed through the field with my boys and hired man, about the first of June, taking out a few scattering stalks of rye, and all foul weeds that we saw.

Egremont, July, 1852.

S. H. Bushnell's Statement.

My field of corn, which you examined, contains three acres. It is not in a high state of cultivation, nor is it any better, or received any extra culture, more than my other plough land. It was mowed last year. The year before, I took off a crop of rye, which was sowed after oats. This spring, before ploughing, I put on some twelve or fifteen loads of very coarse straw manure to the acre, and ploughed it under, eight inches deep, harrowed it, and furrowed it deep, going twice in a row, about three feet apart; marked it across the furrows, making thirty hills on the square rod, which, I think, is about the right number. I put in the hill a shovelful of muck — nothing but muck — which had lain in the barnyard during the winter. And here I wish to bear testimony to the value of muck, or swamp mud, as a manure, particularly in the raising of corn, having used it successfully for a number of years. Early in the fall, I get large quantities of it into my barnyards, filling up all the low places, putting it under my cowhouses, stable windows, and sheds. Here it becomes warmed up, absorbs all the urine and other liquids of the yard, which it retains, and makes it as valuable as the manure from the stable, for

this crop, and for many other purposes. But, to return: my corn was planted about the 20th of May, eight quarts of seed to the acre. Went through it twice, both ways, with the cultivator, (I never use a plough in my corn or potatoes.) Well hoed the first time; after this, but little done to it with the hoe. Never hill up my corn. A few leached ashes put on to some of it after the first hoeing. No plaster or anything else used, or done to the crop.

Every farmer who has muck, or swamp mud, on his farm, has it in his power, at little expense, to improve the condition of his land. In order to get a premium, he is not obliged to put all his manure on one acre, at the expense of the rest of his farm. I have on my farm, in addition to the piece you examined, eight acres of corn, all manured in the same way. There are many ways of composting and making manure, but I know of no way by which as good manure can be made, at so little expense.

Sheffield, Sept. 23, 1852.

Ploughing.

Under the favor of Heaven, it is the plough that makes the harvest joyous. The strong arms of the ploughman, and the glittering ploughshare, are the instrumentalities that have changed a world of blight, and penury, and woe, into a world of fruitfulness, riches, and high enjoyment. No longer do mortals yield to Ceres the credit of bestowing the ear of corn, instead of the Chaonian acorn, nor do they longer ascribe to Bacchus the gift of the grape. The credit is all due elsewhere: it belongs to the noble ploughman.

In proportion as society has made progress in the sciences and arts; proportionally as man has risen from the first stages of civilization to the higher ranks of refinement, the invaluable uses of the plough have been appreciated.

The ingenuity of man has added new forces to the plough, and higher grades of honor have been attached to it, as true philosophy has advanced. In witnessing the triumphs of the plough, we have seen our waste places almost vieing with the once famed Elysian fields of Greece, and outvieing the re-

nowned Lydian mountain, with its saffron odors. The ploughshare is an emblem of the institutions of our northern clime, and preëminently does the New Englander walk in glory, when he walks behind his plough.

He was a public benefactor, who first suggested the competing for victory amongst the knights of the plough. Our hill tops and fields, rugged as they naturally are, witness this truth, that since this competition was instituted, new achievements, as it were, under new auspices, have been gained. The torn and ragged furrow of olden time, was a type of the backward condition of agriculture and its kindred arts; the smooth and beautiful furrow that now adorns our plough-fields, is equally typical of agricultural advancement, and also of the cultivation of intellect and of morals. In view of advancements so successful and important, who does not desire to unite in the acclamation which the better portion of the world is uttering,—"GOD SPEED THE PLOUGH!"

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The whole number of premiums provided, is fourteen, giving a total amount of fifty-six dollars. If within the means of the society, we would respectfully suggest that the number of premiums for subsequent ploughing matches, be increased to at least twenty-four, with an aggregate sum of not less than one hundred dollars.

The number of competitors to-day, was fourteen, viz.: nine with horses, and five with oxen.

In awarding premiums, we have regarded the rules prescribed by the society, and award as follows:

Horse teams—

1. Edson Sexton, of Stockbridge, time, forty-three minutes, thirty-three furrows, . . .	$7 00
2. Joshua R. Lawton, of Great Barrington, time, forty-three minutes, thirty-two furrows, .	6 00
3. John G. Wilson, of West Stockbridge, time, thirty-eight minutes, ...	5 00
4. Lebbeus M. Pixley, of Great Barrington, time, forty-five minutes, thirty-one furrows, .	4 00
5. A. P. Karner, of Egremont, time, thirty-eight minutes, thirty furrows, ...	3 00

6. Leonard Tuttle, of Sheffield, time, forty-five minutes, thirty-one furrows, ... $2 00
7. Thomas Wood, of Egremont, time, forty-six minutes, thirty-one furrows, . . . 1 00

Ox teams—

1. J. H. Rowley, of Egremont, time, forty-eight minutes, thirty-one furrows, . . . 7 00
2. Norman Kellogg, of Sheffield, time, fifty minutes, thirty-one furrows, . . . 6 00
3. George Burghardt, of Great Barrington, time, thirty-eight minutes, thirty-one furrows, . 5 00
4. Jonathan Baldwin, of Great Barrington, time, thirty-seven minutes, thirty-one furrows, . 4 00
5. Jonathan P. Tobey, of Great Barrington, time, thirty-eight minutes, thirty-one furrows, . 3 00

The time allowed for the work was one hour, deducting a rest of ten minutes, at the end of the first twenty-five minutes.

Respectfully submitted,

Increase Sumner, *Chairman.*

Oxen and Steers.

The committee on first division of animals report. The display of fine stock at this exhibition, was truly pleasing and magnificent, in many respects superior to any former show. The farmers have fully shown a great taste and judgment in matching and training their teams, and that competition is no discouragement to enterprise. They award as follows:

For the best pair of fat oxen—

1. W. C. Langdon, of Monterey, . . . $7 00
2. Pratt Toby, of Great Barrington, . . . 6 00

For the best pair of working oxen—

1. John C. Munson, of Great Barrington, . . 7 00
2. Almond Bristol, of Lee, ... 6 00
3. J. W. Parks, of Sheffield, ... 5 00
4. Jonathan Baldwin, of Great Barrington, . 4 00

5. B. C. Beldin, of Sandisfield, ... $3 00
6. F. Toby, of West Stockbridge, . . . 2 00

For the best pair of four year old steers—

1. Rufus C. Fargo, of Monterey, . . . 7 00
2. Benjamin Wheeler, of New Marlborough, . 6 00
3. Luke Harmon, of New Marlborough, . . 5 00
4. M. Butler, of Lenox, ... 4 00
5. E. Shears, of Great Barrington, . . . 3 00

Your committee would here state, that a very fine pair were exhibited by Jared Lewis, of Great Barrington, but were excluded from premium by the rules of the society.

For the best pair of three-year old steers—

1. Mark Laird, of Great Barrington, . . . 6 00
2. E. N. Hubbard, " " . . . 5 00
3. S. M. Cooper, of Stockbridge, . . . 4 00
4. Joseph Wilcox, of Sheffield, ... 3 00
5. L. S. Butler, of Lenox, ... 2 00

Respectfully submitted,

E. B. Garfield, *Chairman.*

Milch Cows, Heifers, and Calves.

The committee on the second division of animals, having attended to the duties assigned them, ask leave to submit the following report:

There were 20 milch cows, and 11 two-year old heifers, offered for premiums, nearly all of which were good, and your committee regret that they have no more premiums to award. The entries for two-year old and yearling steers was light. Your committee award as follows:

For the best yoke of two-year old steers—

1. Luther S. Butler, of Lenox, ... $5 00
2. Leonard Potter, of New Marlborough, . . 4 00
3. A. P. Karner, of Egremont, ... 3 00
4. N. Kellogg, of Sheffield, ... 2 00

For the best pair of yearling steers—
1. Elijah N. Hubbard, of Great Barrington, . $3 00
2. John C. Munson, of " " . 2 00
3. Benjamin Baldwin, of Egremont, . . . 1 00

For the best yearling heifer—
1. Merrick Rice, of Great Barrington, . . 2 00
2. E. S. Rowley, of Richmond, ... 1 00

For the best milch cow—
1. Edward A. Hulbert, of Great Barrington, . 10 00
2. E. S. Rowley, of Richmond, ... 8 00
3. Phineas, Chapin of Great Barrington, . . 7 00
4. Marshall O. Butler, of Lenox, . . . 6 00
5. Horace Ticknor, of Great Barrington, . . 5 00
And an extra premium to P. Karner, Jr., of Egremont, of 2 00

For the best two-year old heifer having had a calf—
1. John H. Coffing, of Great Barrington, . . 7 00
2. Charles F. Coffing, of " " . . 6 00
3. J. P. Tobey, of " " . . 5 00

For the best two-year old heifer, not having had a calf—
1. John C. Munson, of Great Barrington, . . 3 00
2. George G. Pierce, " " . . 2 00

For the best heifer calf, to James Dewell, of West Stockbridge, ... 2 00

For the best bull calf, to Nelson Joyner, of Egremont, 2 00

A reserved premium, to E. R. Joyner of Egremont, for a bull calf, of 1 00

A reserved premium, to Wm. H. Beebe, of West Stockbridge, for a bull calf, of 1 00

For the best bull—
1. E. S. Rowley of Richmond, ... 7 00
2. Franklin G. Abbey, of Sandisfield, . . 6 00
3. Levi H. Kline, of Egremont, ... 5 00
4. George Burghardt, of Great Barrington, . 4 00

W. C. Langdon, *Chairman.*

Swine and Poultry.

The committee on the third division of animals, beg leave to submit the following as their report:

For the best boar—	
1. Plynna Karner, Jr., of Egremont, . . .	$5 00
2. Cyrus Crosby, of Stockbridge, . . .	4 00
3. Charles F. Coffing, of Great Barrington, .	3 00
For the best sow and pigs—	
1. Franklin Toby, of West Stockbridge, . .	5 00
2. E. Kellogg, ...	4 00
A reserved premium to A. F. Barnes, of Great Barrington, ...	2 00
3. William Burghardt, of Great Barrington, .	3 00
For the best pair of Dorkings, to Edmund Joyner, of Egremont, ...	1 00
For the best pair of Shanghae, to B. F. Gilmore, of Great Barrington, ...	1 00
For the best pair of common fowls, to M. N. Tuttle, of Sheffield, ...	1 00
For the best pair of turkeys, to Cyrus Barnes, of West Stockbridge, ...	1 00
For the best pair of geese, to Mason Van Deusen, of Great Barrington, ...	1 00
An extra premium to E. R. Joyner, of Egremont, for a lot of fine turkeys, of	1 00

The owner of one pair of ducks, which were worthy of a premium was not present.

Elmore Parish, *Chairman.*

Sheep.

The committee on the fourth division of animals, submit the following report:

The show of animals in this division was far superior to that of any former year, both as respects numbers and quality. So nearly alike were many of the lots exhibited, that it has been with difficulty that we have been able to divide. We have

endeavored to do justice to all. If we have erred, we ask your forbearance. We award the following premiums:—

For the best coarse woolled buck—

1. Lovett Taft, of Sheffield, ... $4 00
2. James Baldwin, of Great Barrington, . . 3 00
3. M. M. and H. H. Hollister, of New Marlborough, ... 2 00

For the best five fat wethers—

1. A. J. Baldwin, of Great Barrington, . . 4 00
2. H. Cobb, of West Stockbridge, . . . 3 00

For the best fine woolled buck—

1. N. Kasson, of New Marlborough, . . . 4 00
2. N. Cook, of Richmond, ... 3 00
3. Leonard Tuttle, of Sheffield, ... 2 00

For the best middling woolled buck—

1. Ira Curtiss, of Sheffield, ... 4 00
2. G. Burghardt, of Great Barrington, . . 3 00
3. J. G. Wilson, of West Stockbridge, . . 2 00

For the best five coarse woolled ewes—

1. John Taft of Sheffield, ... 4 00
2. J. Baldwin, of Great Barrington, . . . 3 00
3. James Kline, of Egremont, ... 2 00

For the best five fine woolled ewes—

1. G. G. Pierce, of Great Barrington, . . 4 00
2. E. A. Hurlbut, of " " . . . 3 00

For the best five middling woolled ewes—

1. S. H. Bushnell, of Sheffield, ... 4 00
2. F. Toby, of West Stockbridge, . . . 3 00

Silas Smith, Jr., *Chairman.*

Horses.

The committee, to whom was referred the examination of animals in the fifth division, have attended to that duty, and submit the following report:

There were submitted to your committee, as competitors for premium, seven pairs of carriage horses, six pairs of farm horses and ten as beautiful single horses as ever graced a

prince's livery. Twelve matronly dams were there, with their offspring, bright and nimble; each, as it were, with a look of deep anxiety and jealousy, lest another should be more fortunate than herself and offspring in bearing from the field the prize for which all had so laudably striven.

Three beautiful studs were exhibited, which for beauty, speed, and strength of bone and muscle, are seldom excelled or equalled. One three-year old stud colt, belonging to S. P. Lincoln, of Stockbridge, whose delicate limbs and nimble step assured us that he would not remain long in a bad place. M. M. and H. H. Hollister, of New Marlborough, and John G. Wilson, of West Stockbridge, each exhibited a beautiful stud colt, two years old. Five single mares, without foal by side, were also shown, which for beauty, strength and speed, showed conclusively that this indeed is an age of improvement. A three-year old colt belonging to Leonard Church, Esq., of Lee, broke to harness, attracted universal admiration; his size, form and proportions, in the opinion of your committee, have never been surpassed, if equalled, by any three-year old colt exhibited to this society.

The exhibition of horses, in our opinion, exceeds all former ones, and gladly would we, were it in our power, award to each and every competitor a premium, (for all deserved it,) but are reminded, that in a race all run, but some one only can win the first prize. We therefore award as follows:

For the best pair of farm horses—

1. Nathaniel Cook, of Richmond,	$6 00
2. Nelson Joyner, of Egremont,	5 00
3. A. C. Russell, of Great Barrington,	4 00
4. C. Leet, of West Stockbridge,	3 00

For the best pair of carriage horses—

1. A. F. Barnes, of Great Barrington,	5 00
2. W. W. Woodworth, of Great Barrington,	4 00
A reserved premium to L. B. Miller, of Great Barrington,	3 00

For the best single horse—

1. Charles Hudson, of Great Barrington,	3 00
2. A reserved premium to Merrick Rice, of Great Barrington,	2 00

For the best single mare, to Frederick F. Cooper, of Sheffield, ... $3 00

For the best breeding mare and colt by her side—

1. Marshall Brace, of Stockbridge, . . . 5 00
2. Charles F. Colling, of Great Barrington, . 4 00
3. Henry Burch of Sheffield, ... 3 00

For the best stud horse—

1. Edmund Bush, of Sheffield, ... 5 00
2. L. B. Miller, of Great Barrington, . . . 4 00

Your committee recommend that a reserved premium be awarded to Sidney P. Lincoln, of Stockbridge, for a three years old stud colt, of 1 00

For the best two years old stud colt—

1. J. G. Wilson, of West Stockbridge, . . 1 00
2. M. M. & H. H. Hollister, of New Marlborough, 1 00

They also recommend a reserved premium to Leonard Church, of Lee, for the best three years old colt, broke to harness, of . . . 2 00

In submitting this report, your committee would say, they have found it very difficult even to satisfy themselves, where so near an equality universally prevailed, which should be first to receive a premium. We cannot dismiss the subject without mentioning a beautiful pair of carriage horses belonging to Hiram Crittenden, Esq., of Great Barrington; also a fine span of bay horses belonging to George O. Peck, Esq., of Lenox, which, had they not been excluded by the rules of the society, would have received something more real than a passing notice. Also, a span of beautiful carriage horses, belonging to W. W. Hollenbeck, of Great Barrington, and many others worthy of more than a passing notice. We therefore recommend that the society greatly increase the number and amount of premiums on this most noble and useful animal.

Daniel B. Fenn, *Chairman.*

Grass Seed.

The committee on grass seed have attended to the duties of their appointment, and respectfully submit the following report:—

The whole number of entries was nine, but seven only could compete for the premiums offered by the society, two being excluded on account of quantity. After a careful and full examination, your committee believe that the show was decidedly better and surpassing all former exhibitions in extent and quality, which shows plainly that this branch of industry and improvement is on the march. Your committee award the premiums offered by the society, in the following manner:—

For the best two bushels of grass seed—

1. E. C. Carter, of Stockbridge, ... $4 00
2. Samuel Goodrich, of Stockbridge, . . . 3 00
3. E. N. Hubbard, of Great Barrington, . . 2 00

Your committee offer the following extra premiums of one dollar each, for very fine specimens: To Edson Sexton, of Stockbridge, Orrin Curtiss, of Sheffield, George B. Cook, of Sheffield, and Isaac Burghardt, of Great Barrington.

Benjamin Baldwin, *Chairman.*

NORFOLK COUNTY AGRICULTURAL SOCIETY.

In obedience to the statutes of the Commonwealth, the President and Secretary of the Norfolk Agricultural Society herewith make return of the doings and expenditures of said society, for the year 1852.

The income of its funds, the bounty of the Commonwealth, and the exertions of its Trustees, have been devoted, as usual, to the objects enumerated in the act of incorporation, viz.:— "the encouragement of agriculture, horticulture, manufacturing and mechanic arts, in the county of Norfolk, by premiums and other means." The progress and usefulness of the society have been commensurate with the promises and expectations of those who established it, and the results are witnessed in the increased interest manifested in agricultural pursuits; in the improvement of stock; in the more general care and skill displayed in the cultivation of farms; in the more general diffusion of agricultural knowledge; in the planting of fruit and ornamental trees, and in the promotion of rural tastes and dispositions among the people. Since the organization of the society, a large number of animals, of the best breeds, have been brought into the county from foreign countries and other States, and our shows, in this department, compare favorably with those of other and older societies in the Commonwealth. An increased interest is exhibited in the reclamation of lands, and considerable sums have been expended in adding to the appearance and profit of farms in this respect. A much greater attention than formerly, is paid to the cultivation of fruits, and the extensive planting of the apple, the pear and the peach, attest the new spirit which animates the cultivator. The awakened ambition and energy of the farmer, have served also to impel the inventors and manufacturers of agricultural im-

plements, to put forth all their skill in the invention of new implements and machines, whereby the industry of the laborer is rendered more productive and more easy. Information upon agricultural subjects is sought with greater avidity, and books and papers are more widely circulated and more extensively read. These are some of the proofs that the bounty of the Commonwealth bestowed for the encouragement of agricultural societies, has not been wasted, and that the societies themselves are fulfilling the designs for which they were established.

For the first time in the history of the society, two days were this year devoted to the annual exhibition — the first, to the reception of the articles intended for premium and the examination of the judges, and the second, to the public display and the usual intellectual exercises. This arrangement gave general satisfaction, in affording the means for a more thorough examination of articles presented for premium, and also in affording to the numerous judges an opportunity to witness the general display, and of partaking in the ceremonies of the show.

A larger number of teams than usual participated in the ploughing match, which afforded a most animating and agreeable scene, and the spading match — a new feature — excited a lively interest, and attracted a numerous throng of spectators. To what extent spade-husbandry can profitably be adopted in this country, we are not prepared to state; but when we consider that this system of preparing the soil for the seed is the height of good cultivation, it may not be improper to call the attention of the public to this operation.

The exhibition of stock was equal or superior to former years, and although the blood-stock owned by the Massachusetts Society for the Promotion of Agriculture, which was exhibited last year, was withheld, its place was filled by other contributions, sufficient to sustain the reputation and honor of the society.

The number of horses on exhibition, was larger than at any former show. In this department a decided improvement has taken place, and judging from what has been done within the last two years, we may confidently anticipate that these efforts will not only prove of pecuniary advantage to those engaged

in rearing this most valuable of all animals, but will also add to the increasing wealth of our country.

In the departments of swine and poultry, the high character heretofore established by our exhibitions was fully maintained; and there was a liberal and creditable display of fruits, flowers and vegetables, the former constituting, as usual, a prominent feature of the exhibition. The sum awarded in premiums, was greater than in any preceding year since the organization of the society, owing to the extension of the list, and the increased number of contributions. The exhibition, as a whole, was highly successful, indicating an increased interest on the part of the farmers, and a progress in the several branches of agricultural industry.

The address which accompanies this report, was delivered by W. S. King, Esq., of Rhode Island, and was listened to with much attention and interest by a large and appreciating audience.

The company dined under a spacious tent erected for the purpose, and the ceremonies of the table were concluded with speeches and sentiments adapted to the occasion.

This rapid sketch of the proceedings of the society for the current year, will be found more fully illustrated in the accompanying reports, which are respectfully submitted.

MARSHALL P. WILDER, *President.*

EDWARD L. KEYES, *Secretary.*

Farms.

Your committee are obliged to state, with regret, that the indisposition of farmers to compete for the liberal premiums offered by this society, has been strikingly exhibited the present year. We also venture to recommend, that, hereafter, the committee on farms be divided into sub-committees, residing in different sections of the county, who shall ascertain, by personal observation or inquiry, the actual condition of those sections with reference to the character of the soil; the usual methods of cultivation; the crops most generally grown, with

the average cost and net profits of them; the improvements made upon meadows and waste lands, with the expense and result of them; and all such facts pertaining to the subject as will enable them to present, in a combined report, a general view of the agriculture of the county. We believe that the results of such a measure would be much more serviceable than are the reports, which necessarily embrace only the condition of a few particular farms. Competition for the premiums offered by the society may still be invited, and, we think, would be increased. One of the chief causes of the want of competition, which we so much regret, consists, perhaps, of a vague apprehension of inferior claims to success, which a comprehensive view of the agriculture of the county might remove.

Your committee venture to recommend, also, a more thorough comminution of the soil to be prepared for any crop, and commingling of the manure applied to it, than is generally obtained in the ordinary methods of cultivation. We apprehend that the neglect of this entire disintegration of the earthy particles, and intimate blending with them of fertilizing substances, is the cause of many failures in our agricultural experiments, and of many complaints of the barrenness of our soils. It is often the result of what is intended to be a prudent and economical management of a farm; but a saving of labor and expense here, will generally prove injudicious, by a large diminution of expected crops. The well known fertility of alluvial soils in our own State, and of the rich bottom lands in the Western prairies, is, in part, the consequence of the fineness of their constituent particles, "giving them," as it has been said, "a superior power for the absorption, retention and condensation of moisture, carbonic acid and ammonia, with an opportunity for the free permeation of atmospheric air, and a facility for the rootlets of plants to extend, and to receive and appropriate nourishment."

Experience and observation have forced upon us the conviction that manures act most serviceably, in the cultivation of any crop, when deposited near to the surface of the ground. Taking this remark in connection with what had preceded it, the cultivator cannot bestow too much pains upon the deep and repeated ploughing of the soil, and the immediate and many times repeated harrowing in of manure spread upon its surface.

It will be highly useful, as well as gratifying, to know what may be the result of such a method of cultivation as we have here in view and would recommend. We hope the result of several experiments, upon this plan, will be given us at the close of the ensuing year; that it may be shown whether a faithful and laborious, perhaps expensive preparation of the soil, is justified by increased profits to the cultivator.

The only farm which was entered for the premiums of the present year, is that of Mr. Hiram W. Jones, of Dover. Your committee had no opportunity to visit this farm before the first week in September. The condition of it, however, was familiarly known by some of our number. A thorough examination of it, during our visit, served to increase our admiration of its general appearance, and of the judicious and successful method in which it was cultivated. We observed, in particular, the thorough draining of the land; the firm and smooth surface of productive mowing grounds, which had once been wet and unprofitable meadows, or worthless and unsightly bogs; the judicious composting and application of manures; the arrangement of the barn, the cattle-yard and the hog-sty, so as to combine the greatest convenience and utility; the careful selection and preservation of tools and carts; and various contrivances for lessening labor and expense, and for increasing comfort and profit.

It may be said of many farms, that they are waste places in a double sense. But not so can it be said of this. There is in every part of the farm ample proof not only of good cultivation, but also of most diligent care. Every tool and implement appeared to be in its proper place, and in fit condition for use.

The accompanying statement by Mr. Jones, will afford the proper information respecting his usual mode of cultivation and its results. Your committee will only add that this farm appears to have been steadily improving since the first examination of it, in 1849; and that we now accord to Mr. Jones the society's first premium of $25.

By invitation of Aaron D. Weld, Esq., of West Roxbury, your committee visited his farm on the 3d of October. Several hours were here spent in careful examination of extensive improvements, exhibiting at once good judgment and practical skill, and which, we doubt not, will render this one of the most

productive, as it now is one of the most attractive and elegant farms, in this part of the county. Everything we had opportunity to notice here, was fitted to give instruction and encouragement; and afforded ample proof of Mr. Weld's own interest in agriculture, and of the faithful coöperation of those whom he employs upon this large estate.

We understand that this farm has been entered for the premium to be paid in 1855, to the successful competitor in progressive husbandry; and that a minute and comprehensive report of its condition will then be presented. We shall only add our testimony, therefore, to its manifest improvement since the last year, and its admirable appearance at the present time, and express our grateful acknowledgments to Mr. Weld, for the polite and gratifying attentions we received.

For the committee,

C. C. Sewall.

H. W. Jones's Statement.

The farm entered by me for premium, contains one hundred and ten acres. Of this, twenty acres are woodland, and forty are used as pasture. The remainder originally consisted of sandy plains, peat and bog meadows, pond holds and alder swamps, upon which grew meadow moss, coarse grass, blueberry bushes and sheep laurel.

About twelve years ago, I reclaimed about half an acre adjoining the upland, and succeeded so well that I was encouraged to proceed. By draining thoroughly by open drains, three feet wide at the top, and one and a half feet wide at the bottom, and from two to five feet deep—by ploughing in some places, paring and burning in others, and in others covering with sand—I have caused about twenty-two acres, that were nearly worthless, to yield good crops of English hay, so that instead of cutting four or five tons as formerly, it now produces from thirty to thirty-five tons. The principal crops are hay, corn, rye, oats, and potatoes; these, with the exception of the rye, are consumed upon the farm in making beef, pork, and milk, thereby furnishing a good supply of manure. About an equal quantity of soil is mixed with the manure in the barn cellar, when it is to be used near, and in the field, if to be used

at a distance. About one-half of this is used as a top-dressing upon mowing land, in November, spread from the cart, and the rest is used in manuring grain, roots, and vegetables.

Both horses and oxen are used. The oxen, by advance in value, more than pay for their keeping, and being changed annually, leave their labor as *net profit*. Milk is furnished for the Boston market from October to May. The rest of the time, young calves are bought at Brighton and fattened for market, there being at this season no demand for milk for market. From ten to twenty swine are kept, and when none but the best kinds are raised, they are found to be profitable; they are fed with corn on the cob, apples and vegetables, and their drink is meal, or shorts and water. Barnyard fowls are the most profitable stock kept on the farm; forty or fifty of them, in eggs and chickens, pay one dollar each, net profit, yearly. Sufficient help is employed to attend to everything at the right time, and proceed with improvements. None but the most approved tools are bought, and none are borrowed. Fruit trees have been set out, which produce sufficient fruit to supply the family with various kinds, and have a surplus for market. Most of the hay is raked with Delano's Independent horserake, which I consider to be *the* rake, after a trial of several. The threshing is performed by horse power.

Dover, Nov. 5, 1852.

PLOUGHING.

Double Teams.

The whole number of double teams entered for the ploughing match, was ten; and the performance of all of them was very creditable. The ground selected was smooth land, with a firm sward, and was turned with great exactness in most cases, some of the teams ploughing nine inches in depth. The average time was thirty-five minutes, each land containing one-eighth of an acre.

The operations of the plough are greatly modified by circumstances,—the condition and quality of the land, the season

of the year, and the crop proposed to be cultivated. In breaking up an old field for the common purpose of increasing the fertility of the soil, the depth of the furrow should be limited only by the strength of the team; the more earth exposed, the more perfect the operation. In breaking up a field in the autumn, with the design of cross ploughing and planting in the spring, lapping the furrow slices is supposed to hasten the decomposition of the sod. In the spring, however, where the harrow alone is to be used after the plough, the more complete the inversion of the sod the better.

The most important crop in our vicinity is hay, and much difference of opinion exists among farmers as to the application of the plough in reference to this production. Upon moist lands, very good crops of grass are raised by inverting the sod with care, and sowing on the bottom; but the want of deep ploughing is said to show itself soon, in the early diminution of the crops. Thorough ploughing, continued for two years, with fallow crops, carefully weeded, avoiding fresh manure the second year, is the surest basis of an enduring and heavy growth of hay, and the only way to eradicate the ribwort, the whiteweed and the buttercup, the greatest enemies of our hay crops.

For the committee,

JAMES M. ROBBINS.

September, 1852.

SINGLE TEAMS.

The committee on ploughing with single teams, award the following premiums:—

E. W. Robinson, Dorchester, Ruggles, Nourse & Mason's plough, first premium, ... $10 00
Benjamin V. French, Braintree, Prouty & Mears's plough, second premium, ... 9 00
Lemuel W. Babcock, Milton, Prouty & Mears's plough, third premium, ... 8 00
Henry Goulding, Dover, Prouty & Mears's plough, fourth premium, ... 7 00

J. Willard Daniels, Medway, Prouty & Mears's plough, fifth premium, ... $6 00
Timothy Tucker, Milton, Prouty & Mears's plough, sixth premium, ... 5 00

LUTHER EATON, *Chairman.*

HORSE TEAMS.

The committee on ploughing with horse teams, respectfully report:—

There were eight teams entered for premium. The competitors were notified, that if the work was completed within the time prescribed, and of the required depth, the quality of the work alone would determine the award. All the competitors completed their work within the time, and of the required depth, with one exception. The work was well done, and the discipline of the teams generally good; and your committee believe, on no occasion, considering the uneven surface of the ground allotted to the horse teams, has such perfection in ploughing been exhibited. Where all did so well, it was hard to discriminate; but after a careful examination of the work, they award as follows:—

To Benjamin V. French, of Braintree, Prouty & Mears's plough, first premium, ... $8 00
To Hiram W. Jones, of Dover, Ruggles, Nourse & Mason's plough, second premium, ... 6 00
To I. H. Meserve, of Roxbury, Ruggles, Nourse & Mason's plough, third premium, ... 4 00
To B. N. Sawin, of Dover, Ruggles, Nourse & Mason's plough, fourth premium, ... 2 00
To George B. Cook, of Bellingham, Martin & Co.'s plough, a gratuity of 2 00

HORATIO N. GLOVER, *Chairman.*

QUINCY, Nov. 10, 1852.

Spading.

The committee appointed to award the premiums of the Norfolk Agricultural Society for the best spading, have attended to the duty assigned to them, and beg to present the following report:—

The practice of turning up the earth by some kind of an instrument, guided by the hand, resembling what we now call a spade, is probably the most ancient and the most original method of preparing the soil for the seed.

But, like everything else in the world, the spade in the hand of the thinking and industrious man, is quite a different instrument to what it is in that of the mere plodder, the thoughtless and careless laborer.

Hence there exists such an idea in the philosophy of using the spade, as well as one of fair comparison between its value and that of the plough, or other instruments for tilling the land.

There are two ways of commencing the operation of digging a plot of ground. One is by opening a trench along one side of the piece, and carrying the earth therefrom to a line parallel on the other side, so that the soil from the second is turned into the first trench. The other is by commencing at a corner and digging along in diagonal lines, by which the labor of carrying the earth from the first trench is avoided.

The spade should be pushed into the ground nearly, perhaps not quite, perpendicularly, in parallel rows, the distance of which from each other depending somewhat on the nature of the soil; in any case, however, not exceeding eight inches. It should be carefully lifted and the load turned over, so that the earth from below may lie on the top; the large clogs should be coarsely broken.

Careless spading is when the spade is pushed down in a slanting direction, say at an angle of about forty-five degrees; by this means the work is done in much less time, but the earth is only stirred for the roots, &c., half as deep, and a greater portion of the upper surface, which has been exhausted by the previous crop, remains at the top. Sometimes, even, the spade is only inserted half way down, and after giving it a *knowing* twist, to loosen the soil, so that it may be raked even, is again withdrawn.

Another error committed by many good hands at spading, is breaking the clods too fine. This beautiful dressing, which makes the surface look so handsome and even and is considered quite an attainment by some gardeners, is by no means desirable; the earth should be left as open as possible in reason so that air and moisture may have free access.

These observations should be attended to by young hands particularly, as a habit of careless spading is not readily changed. Careless spading, in fact, is nothing but shovelling.

Suppose, then, spading to be thoroughly done, the next question is, how does it compare in value with ploughing or other methods of stirring the soil? The plough generally penetrates the soil from five to seven inches; the furrows are turned so that the top of the land is only partially reversed, and the sods of grass do not decay, but vegetate and use up a portion of the manure with which the land is dressed. On the other hand, the spade penetrates nine inches, the upper surface is placed underneath, and any grass sods may, by care, be so completely reversed that they decay and serve as food for plants, instead of appropriating that which was not intended for them.

The soil at about eight inches below the surface is always the richest, particularly in light lands, as the pieces of manure, leached down by rains, is generally retained by it; hence the value of having it near the surface.

The experiment has often been tried to ascertain the comparative value of spading and ploughing, and although, of course, the first is the most expensive, yet the excess of productiveness of the spaded land has often more than repaid the excess of expense.

An eminent horticulturist in the vicinity of Boston has, for the last six or seven years, pursued the following practice of spading, with the best success. In the autumn his land is dug over, leaving eighteen inches from the centre of the trench to the crown of each ridge. In the spring his manure, (chiefly guano and gypsum, although any other manure would answer,) is strewed in the trenches where it is turned over by the spade. A portion of one ridge, about two inches in depth, is drawn over this, the seed sown, and the other portion of the ridge raked over them, or cabbages may be planted in the

trenches in the same way. In the following autumn, trenches are made where the ridges were before; thus the soil undergoes complete rotation, and no more manure is used than the crops require; in other words, none is wasted by being put where the only crop is weeds.

For carrots this method is particularly beneficial, as, if the trenches are spaded pretty deep after putting on the manure (guano) and the whole of the ridge is hauled over it, then a little guano scuffled into the surface before the seed is sown, the whole ground is light and well manured below, so that the root of the carrot can be coaxed down to a great depth in search of food, and without any impediment to its growth.

There is no exercise more healthy for man than spading. The whole of the muscles are brought into play in their natural direction. Any one who has for the first time attempted to swing the scythe, will well understand this observation. The muscles here are laboriously moved in an unnatural direction, and much pain and fatigue are the consequence. If many of our commercial citizens, who lead a sedentary life, would take an hour's spell at spading early in the morning before coming to business, they would, we think, obtain a rich crop of health; and if the land was kept for nothing else but to be spaded over, the produce we believe would amply repay them.

With these few general remarks, which your committee trust may not be considered as inappropriate, they proceed to state the names of the parties to whom they awarded the premiums, viz.:—

1st prem.,	for	the	best	spading,	to	Patrick Donahoe,	$5 00
2d	"	"	next best	"	"	Patrick Argo,	4 00
3d	"	"	"	"	"	Timothy Hickley,	3 00
4th	"	"	"	"	"	John Cox,	2 00
5th	"	"	"	"	"	Dennis Doody,	1 00

All which is respectfully submitted for the committee,

SAMUEL WALKER, *Chairman.*

ROXBURY, Nov., 1852.

Agricultural Implements.

The committee on agricultural implements, regret, like their predecessors of the years 1850 and 1851, that they are obliged to report that few specimens were exhibited, and those of articles in common use among our farmers generally. They were hay and manure forks, and potato diggers, from the manufactories of Henry Partridge, Jr., of Medfield, and Francis Morse, of South Dedham. The implements of Mr. Partridge have long been familiar to the public, and their reputation has been established by the testimony of the farmers of New England and the principal agricultural societies of this and other States. He has kept pace, not only with the improvements of others, but has, in some material points, taken the lead in model and design, so that his implements are not surpassed by those of any other manufacturer. Those exhibited were clothed with no extra finish, but were in the ordinary state of his wares when sent to market. They exhibited a great advance in improvement as compared with those in use not many years since, in shape, lightness and temper, and afforded the most striking testimony of the aid rendered by mechanical skill and ingenuity to the business of the farmer. The implements of Mr. Morse were not only of the same general character as those exhibited by Mr. Partridge, but were manufactured after nearly the same models, and were nearly of the same description. They were of superior finish and of a high order of workmanship. They were very beautiful in appearance and attracted the attention of many spectators. The committee have no reason to believe that they were not equal in temper and all the characteristics of good implements with those offered by Mr. Partridge, and found some difficulty in coming to a conclusion upon the subject of awarding the premiums. The historical reputation attached to those of Mr. Partridge, however, was permitted to have some weight, as the known qualities of his implements, which have been so long and highly appreciated, could not be placed second to any others that had not been as thoroughly tested by experience. The committee, however, were well convinced of the merits of the articles manufactured by Mr. Morse, and have no hesitation in ex-

pressing their belief, that they will stand the test of trial, and finally acquire a reputation by experience equal to that which they acquired by observation.

These comprised the whole exhibition of agricultural implements. Formerly it was the custom of manufacturers of and dealers in these articles, to send liberal contributions to the various county shows, which tended to add interest to the latter and to increase their attraction; as nothing can be more appropriate at an agricultural exhibition than those implements which are the symbols of that great and almost universal employment. The trouble and expense, however, of contributing to the numerous annual exhibitions was at length considered to be more burdensome than profitable, and an agreement was entered into on the part of the manufacturers to withhold their contributions. It is not for the committee to question the competency of these parties to conduct their business in the most profitable manner; but it seems not unreasonable to suppose that in a business so progressive as that of the manufacture of agricultural implements, there should be enough improvements in the old, and enough inventions of new ones, to make up a respectable show annually, of such as are worthy of inspection, which have not before been generally adopted, and which have not passed the ordeal of a public and critical examination. The farmer and agricultural implement maker are mutually bound together by the strongest ties of interest, and the same stimulus which promotes the advancement of the one, operates equally to the advantage of the other.

Agricultural organizations and cattle shows, serve to awaken the attention of farmers to the necessity of employing all the aids which mechanical skill and invention can supply, and thereby increases the demand on that skill, and every aid which the latter can contribute to the success or prosperity of the former, is so much contributed to its own. And it is observed that while the manufacturers and dealers are withholding that aid which they formerly bestowed upon the annual shows, they are not unmindful of the advantage to be derived from the ploughing matches, and seem still to take a peculiar and warm interest in having those instruments which are fortunate enough to secure premiums carefully recorded by their names and titles, together with the names of their manufactu-

rers, in the reports and transactions of the several societies. When the reputation of an implement has become thoroughly established, and its properties well known to the public generally, it may not be useful or expedient to burden exhibitions with it year after year; but with the thousand changes, alterations, improvements and new inventions which are being made and taking place constantly, there is enough to contribute vastly to the interest of exhibitions, and the public display of which could not fail to be conducive to the interests of manufacturers and farmers.

In New York the implement department is one of the most varied and interesting of their exhibitions. The State society of that great State, to be sure, offers a wider field for display than our county societies, and the extent of the farming in that section has been the means of the introduction and use of a large number of machines but little known among the small farmers of New England; but there can be no good excuse for the abandonment entirely of a plan here, which is carried out on a scale so extensive, and so conducive to public improvement, there. To show at once something of the extent and variety of those exhibitions and the character of the implements and machines common in New York, and which are rarely seen in this Commonwealth, we copy the following names of articles for which premiums were awarded there in 1850.

"Corn Cultivator; Fanning Mill; Cornstalk Cutter; Corn and Cob Crusher; Horserake; Grain Cradle; Six-hand Rake; Threshers, to be used with horse or steam power; Seed Planter; Grain Drills; Broadcast Sower; Wheat Cultivator; Portable Saw Mill; Corn Sheller; Vegetable Cutter," &c. &c.

We find in a newspaper the following account of the "Horse Drill," a machine of great labor-saving power.

"This machine will plant wheat, rye, Indian corn, oats, peas, beans, ruta-bagas, &c., and can be regulated to drop any required quantity on an acre. The drills can be thrown in or out of gear separately, so as to plant a field of any shape without seeding any part twice. They are so arranged as to operate well on all kinds of land,—hilly and rough, as well as level and smooth. A man with two horses can put in from

ten to twelve acres with wheat in a day; and with one horse he can plant twenty acres of corn per day."

We also copy from a newspaper the following account of a machine for digging potatoes.

"The machine embraces a scoop, a brush cylinder and endless apron, connected by a movable frame, by operating with the scoop is made to enter the ground the required distance, and raise up the potatoes, which, by a cylinder having a revolving brush, the potatoes are brought forward from the scoop to the endless apron, which carries them away and deposits them in a receptacle at the back of the frame. The machine is designed to be worked by horses. The bottom of the scoop, also the bottom of the receptacle for the potatoes, is formed of bars, to separate the dirt from the potatoes; the brush also removes the dirt, so that they are rendered very clean."

The public are already familiar with the celebrated reaper, which was the pride of America and the wonder of the world, at the fair recently held in London. Formerly such a machine would have been regarded as the enemy of the laborer in its character of substitute for his services; but experience has taught that the condition of all classes is improved by such substitution, and that comforts are increased and civilization advanced by means of the application of power to multiply the products of the earth and mitigate the severities of labor.

Agriculture, being the mother of the arts and the sole reliance of civilized man for the means of subsistence, and its operations having been in a great degree dependent upon the application of muscular strength, it has naturally followed that the greatest attention has been bestowed, in modern times at least, upon the means for facilitating the labors of the husbandman, and to mitigate the hardship of his toil. And thus we find the experience of the farmer, the ingenuity of the inventor, and the skill of the mechanic, have combined, from the earliest periods, in endeavors to improve every species of agricultural implement, and to enlarge the sphere of them until we are prepared to contrast the grand and beneficial results of to-day with the feeble beginnings and rude attempts of our ancestors. It is hoped that these endeavors will not cease, but by the aid of agricultural societies and the patronage bestowed

by governments, they will be stimulated and encouraged for the advancement of agriculture, and thereby of the public welfare.

Edward L. Keyes, *Chairman.*

Sheep.

The committee on sheep, respectfully report, that the only flock entered for premium, was that exhibited by Mr. Henry Liversidge, of Dorchester. This flock was a very fair one, and appeared to be in good health and condition. It consisted of three South Downs and three Cheviots. There was among them a full blood South Down buck, of very good form and size, having a full, even fleece of wool, of good quality (for South Down). The committee did not think, however, that the whole flock possessed such points of superiority as to entitle them to the first premium.

They have, therefore, awarded to Mr. Henry Liversidge, of Dorchester, the second premium, of $3.

The committee regret that so little interest is manifested in the raising and improving of this valuable stock in Norfolk county. They believe there are many farms in this county, well adapted to the keeping of sheep, and that if our farmers would, in such cases, keep a fair proportion of sheep, it would improve their farms, and yield a better profit than is gained by keeping different stock altogether.

Sheep will consume much feed that is left by other stock and lost, and at the same time will enrich the ground, and give it a much smoother appearance.

The Spanish Merino sheep, crossed with the South Down or the Leicester, produce a heavy fleece, about the quality of wool most used in this county, and grow hardy, of large size, and good for the butcher.

Both wool and mutton are in good demand in this county, and generally bring such prices that we need not seek for a market elsewhere.

There is annually worked up in the factories of Norfolk county, about half a million pounds of wool, for which is paid, in cash, about two hundred thousand dollars. All this

goes out of the county. A part, at least, and we think a large part, might be as well supplied from our own farms. From the best information we have been able to obtain, there is not annually raised in this county at the present time, nor has there been for a number of years, one thousand dollars worth of wool. Let the same interest be felt for raising and improving sheep, which there has been for raising and improving swine, during the last few years, and our annual exhibitions would present as fine a show of sheep as we have seen this year of swine; and we believe the profit to the farmer would be as great. There have been imported within a year or two, some very superior French Merino sheep, that will shear from fifteen to thirty pounds of wool, each. The chairman of the committee has examined both the full and the half blood sheep of this stock, and has never before seen any equal them. They cost, at this time, rather more than our small farmers can afford to pay; say from two hundred to three hundred dollars per head for full blood, and from fifty to one hundred dollars for half blood. The half blood sheep are, however, increasing very fast, and may soon be bought at lower prices; and they are very much better than any now kept in the county.

The committee would not wish to occupy too large a space in their report, but they feel it to be a duty to make a few remarks founded upon their own observation, respecting the profit of raising and keeping sheep in Norfolk county.

A farmer in Walpole, having a small farm, formerly kept forty sheep, four cows and one horse, and had food enough for them the year round. The price of wool falling, he sold his sheep, and for a number of years has kept other stock altogether. He now keeps but three cows and one horse the year round, and pastures two cows extra through the summer — say from the first of June to the first of November — sells very little hay, not half enough to keep another cow; he has the same amount of pasture and mowing as when he kept the forty sheep in addition to his other stock, and yet his farm does not look near as well as it did then. He used to raise turnips among his corn, for his sheep to eat in winter, and gave them, besides, a few bushels of grain. The lambs, however, more than paid for the extra feed.

A farmer in Wrentham, for a great number of years, kept about sixty sheep, eight or nine cows, (or other stock equal,) one pair of oxen, and one horse. After keeping the sheep for a number of years, he told the chairman of this committee he could then keep as large a stock on his farm with the sixty sheep, as he could keep without them before; showing that they had improved the farm to furnish their own support. To stock a farm entirely with sheep, would not be so profitable as to keep a limited number; yet, if a farm were stocked entirely with sheep, it might pay, perhaps, about as well as other stock. We suppose it would be fair to calculate that eight sheep would consume as much food as one large cow, and that the net annual proceeds of small flocks kept in Norfolk county, would not vary much from three dollars per head; this would be about as large a profit as other stock would yield, taking into account the extra cost of labor that it requires, such as the dairy, etc. In a neighborhood where there is a regular market for milk, cows will undoubtedly pay the greatest profit, as all the reports show.

A farmer in Rhode Island, a year or two since, had thirty sheep, which cost, at $1 67 per head, $50 10. He sold the same, with their lambs and wool, within one year from the time of his purchase, for $210, or something more than $5 net profit per head. This, however, we consider much above an average profit, but shows that small flocks pay the largest profit.

The committee cannot but hope that the farmers of Norfolk county will look carefully at the value of sheep as a profitable stock, and that not many years will have passed, before the exhibition of sheep at our annual fair will equal that of any other stock.

Truman Clark, *Chairman.*

Cows.

The committee report that there were a large number of cows on exhibition, only seven of which were offered for premium in the class of milch cows.

These were entered by—

Samuel J. Capen, Dorchester, 1 Holstein.
Simeon Burr, Foxborough, 1 Native.
Samuel J. Capen, Dorchester, 1 Durham.
Isaac W. Follansbee, Dorchester, 1 one-half Ayrshire.
Luther C. Bailey, West Roxbury, 1 Durham and Native.
Otis Sawyer, Needham, 1 Durham and Native.
Samuel J. Capen, Dorchester, 1 Ayrshire.

The premiums for milch cows were awarded to the following persons:—

Samuel J. Capen, 1st premium, for his cow Jessica, .	$10 00
Samuel J. Capen, 2d premium, for his cow Nancy, .	8 00
Simeon Burr, 3d premium, for his cow Native, .	6 00
S. J. Capen, 4th premium, for his cow Mrs. Cushing,	4 00
And the committee recommend a special gratuity to Luther C. Bailey, for a splendid cow, which, by the rules of the society, was excluded from competition,	8 00

They also would make favorable mention of the fine cows of Messrs. Follansbee and Sawyer.

Premiums for cows not in milk:—

Devon,	1st	prem.	to	B. V. French, Braintree, .	$5 00
Ayrshire,	1st	"	"	J. H. Robinson, Dorchester, .	5 00
"	2d	"	"	Samuel J. Capen, Dorchester, .	3 00
Grade,	1st	"	"	B. V. French, Braintree, .	5 00
"	2d	"	"	Charles Sampson, Roxbury, .	3 00
Native,	1st	"	"	Marshall P. Wilder, Dorchester,	5 00
"	2d	"	"	Aaron D. Weld, W. Roxbury, .	3 00
Durham,	1st	"	"	Herman C. Fisher, Franklin, .	5 00

A gratuity is also recommended to S. J. Capen, for his magnificent cow "Jessica," although not strictly of this class, of 5 00

There were several other fine cows on exhibition, and the committee regret that they had not the means of extending the premiums so as to reach them. They feel assured that at no county show in the State have been presented superior animals, than, this year, came under their inspection at Dedham. The cow "Jessica," as will be seen by the statement annexed, was certified to have averaged 26½ quarts of milk per day for

ten days, at her flow; and 20 quarts per day, three months from her calving. A native cow, "Brindle," was certified to have made 14½ pounds of butter per week, for several successive weeks;—milk equal to more than one-half pound per week having been used in the family.

It is gratifying to see the commendable spirit awakened in this interesting and important branch of the farm economy; but there is yet room for great improvement. The average yield of milk throughout the year, in this State, would probably not exceed four quarts per day, or 1,460 quarts per annum, from each cow; while there are instances, in other States, of herds which have averaged more than double this yield. "He that runs may read" the lesson that is here presented to us, and your committee suggest that a premium be offered for the lot of cows, not less than six in number, which shall yield the greatest amount of milk, not less than eight quarts per day, for a year; the statement of the applicants to contain an account of the quantity and kind of feed allowed each animal—the mode of feeding—whether pastured or stabled in summer, and other particulars of importance—and to be verified by one or more of the attendants upon the animals.

To obtain a great yield of milk, many things are necessary besides obtaining great milking cows; for animals of middling quality, with good and judicious treatment, will excel in their annual produce really better cows, which may not be so well cared for.

To insure a healthy and a full yield of milk, it is of the first importance that a cow be well fed with a sufficiency of proper food, and be kept clean by continued currying and cardings; on the same principle that race horses are enabled *to do their best* by faithful grooming, as well as feeding. They should be gently treated; for a little observation will teach any one that *worrying*, whether it proceeds from a bad temper or bad treatment, lessens a cow's yield. They should also be fed, watered, driven to pasture, or stabled, and milked, with regularity. At a given hour, a cow expecting her daily allowance of food or water, or to go to the pasture, or to be driven home to be milked, grows uneasy, and either by fretting decreases the amount of her daily yield, or by being forced to hold up her

milk for a greater or less time, acquires the habit of withholding or of dropping it.

It has been ascertained by experiment, that a cow in milk or in calf, will consume 3 per cent. of her live weight in hay, per day, or an equivalent to it; thus a cow of 1,000 pounds, will consume 30 pounds of hay, equal to 6 bushels of cut hay. But it is, on various accounts, desirable that she should have a change of food, and not live on hay alone. A diversity of diet is as necessary for the animal, as it is for man. For this purpose, it is the custom of some to feed one-half hay, and to supply the balance with roots, shorts, corn or oil meal. Practical men are not satisfied, we believe, that it is profitable to steam or cook the food, except where the number of animals is so large as to make the extra expense of this small, *per head.* The committee are, however, of opinion, that the prevalent custom of feeding out to cows, roots, in an almost frozen state, or shorts and meal with cold water, and nearly congealed, or to give them ice water to drink, cannot but be prejudicial to the animal, particularly to the yield of milk. Cold substances, in large quantities, rob the stomach of much of its warmth, and greatly derange its operations. With little trouble, roots may be kept where they will not freeze, and every good farmer will possess these accommodations, and also the means of warming the water which may be mixed with meal, and of tempering that which is used for drink.

These may be esteemed as of small consequence; but when it is remembered that a farmer's gains are made up of "small affairs," they will assume a due importance.

To give to this subject the consideration it deserves, would transcend the limits of this report. The committee, therefore, in conclusion, commend to the attention of the farmers of Norfolk county, the excellent agricultural papers that treat more fully of these matters, and in particular, the Report on Milch Cows, by Hon. Allen W. Dodge, Secretary of the Essex Society, to the Massachusetts Board of Agriculture.

For the committee,

MARSHALL P. WILDER, *Chairman.*

Samuel J. Capen's Statement. No. 1.

The Holstein cow "Jessica," is seven years old. She calved on the 31st of August, 1851. Her calf was taken from her when two days old. From O to Oct. 10th, she averaged 26½ qts. of milk per day, weighing 64 lbs. From Jan. 1st to Jan. 10th, (three months from the time of her calving,) she averaged 20 qts. of milk per day, weighing 48 lbs.

P. S. From Oct. 1st to Oct. 10th, she was fed on grass, 2 qts. meal and 2 qts. shorts per day. From Jan. 1st to 10th, she had 2 qts. meal, 4 qts. shorts and ⅓ bqsh. carrots per day.

Dorchester, Sept. 28, 1852.

This cow has given 30 qts. of milk a day. At the show of the American Institute, New York, she was awarded the first premium as a milker. She gave 15 qts. of milk at one milking, *on the ground.*

W. S. King.

Samuel J. Capen's Statement. No. 2.

The Durham short horn cow "Nancy," is eight years old. She calved Oct. 1, 1851. Calf killed when two days old. She averaged, from the 20th to the 30th of Oct., 22 qts. per day, weighing 51 lbs. She was fed on grass, 2 qts. meal and 2 qts. shorts per day. From Jan. 20 to Jan. 30, she averaged 16 qts. per day, weighing 37 lbs. She was fed on hay, 2 qts. meal, 4 qts. shorts and ⅓ bush. carrots per day.

Dorchester, Sept. 28, 1852.

Simeon Burr's Statement.

I offer for premium my native red twin cow, four years old. From the 2d to the 12th of June, she made 17½ lbs. of butter. From the 10th to the 20th of Sept., she made 15¼ lbs. of butter. She calved the 18th day of April. I sold the calf when three weeks and three days old, for $7 25. She has had nothing but grass and cornstalks.

Foxborough.

Samuel J. Capen's Statement. No. 3.

The cow "Mrs. Cushing," is full blood Ayrshire, from the imported stock of Mr. Cushing, of Watertown. She is five years old. She calved when two years old; has had three calves, and has not been dry since her having her first calf. She calved Nov. 3d, 1851. From Dec. 1st to 10th, she averaged 15 qts. of milk per day; was fed on hay, 1 qt. meal, 4 qts. shorts and $\frac{1}{3}$ bush. carrots. From March 1st to 10th, she averaged 12 qts. per day, weighing 28 lbs. Fed the same as above.

Dorchester, Sept. 28, 1852.

Luther C. Bailey's Statement.

This cow was bought of Josiah Fogg, of Deerfield. She is now owned by William H. Sumner, of West Roxbury, who purchased her last November. She is half native and half Durham, and is nine years old. She calved the 11th of August, 1852. In seven days, from the 21st to the 27th of Aug., she gave 154$\frac{1}{2}$ qts. of milk, which weighed 404$\frac{1}{2}$ lbs. Her feed was 2 qts. of shorts and 1 qt. of meal a day. As the grass in our pasture all dried up, the weighing of the milk was discontinued; but after the rains, the feed grew better, when I made a second trial, from the 18th of Sept. to the 27th, ten days, she gave 231$\frac{1}{2}$ qts. of milk, which weighed 601$\frac{1}{2}$ lbs. Grain, 4 qts. a day; 2 of meal and 2 of shorts.

Neither of these experiments fairly tested the productiveness of the cow, which would have been considerably increased if we had had good grass. As it was, she was pastured on old mowing fields, upon which the grass was short, but started after the rains. This remark is proved by the report of the committee of the Franklin Society, where she was kept in the rich Deerfield meadows, and produced in seven days 465 lbs. of milk, from which 17 lbs. of butter were made. We could not make butter for trial this year, as the milk was daily used. She made great quantities of butter all winter and spring, which was used in the family; she also supplied them with all the cream they used. She gave milk until the time was out for her to calve, which was nearly four weeks after.

Bulls.

The committee on bulls report the following award of premiums:

Devons.	1. B. V. French, of Braintree, . .	$5 00
"	2. Franklin King, of Dorchester, . .	3 00
Durhams.*	1. Samuel J. Capen, of " . .	5 00
"	2. Edward King, " " . .	3 00
Ayrshires.	Certificate to S. J. Capen, of Dorchester.	
"	1. Curtis Stone, of Wrentham, . .	5 00
Grades.	1. Ezekiel Peabody, of Needham, . .	5 00
"	2. J. S. Beal, of Quincy, . . .	3 00
Natives.	1. C. S. Hammond, of Medfield, . .	5 00
"	2. B. N. Sawin, of Dover, . . .	3 00
Bull calves.	1. J. H. Robinson, of Dorchester, . .	2 00
"	Gratuity to Aaron D. Weld, of West Roxbury, ...	2 00

The chairman of the committee on bulls, not being able to meet with his fellow members of that committee, to submit to their inspection the portion of the report that follows, and being ignorant, therefore, how far it would meet their approbation, begs leave to present the views that follow as simply his own opinions, founded on many years of experience in the breeding and management of neat cattle.

If the use of a bull be merely to keep up a succession of fresh milk cows in a stable, it matters little whether the animal be good, bad or indifferent, so long as he is sure. But if the object be to rear the calves, and thus to obtain superior milch cows and working oxen, it is of the utmost importance that the selection of the bull be a wise one. Holding these views, the undersigned submits to the farmers of the county, whether the use of grade and native bulls is not, at the least, injudicious.

The Devon, the Durham, the Ayrshire and the Jersey bulls, are valuable, not because they come of importations from across sea, nor because they cost and command a large price;

* The committee have called the bull of Mr. Capen, which is, in fact, three-fourths Durham and one-fourth Holstein, a *Durham;* from the fact that the Holsteins are by many set down, as the origin of the Durhams.

but because they are the result of careful, continued and judicious breeding, under the direction of men who have devoted to the business their entire attention for a long series of years, and because the animals thus carefully bred beget their like, and transmit their qualities, with scarcely an exception, to their get. Instance the Devons, as one of the oldest breeds, how true are all to their color and other characteristics; insomuch that a child can always recognize the breed at a glance. The instances are rare, where a heifer calf out of a good milking cow, of a pure blood, by a thorough bred bull coming of a good milking tribe, fails to be herself a good milker. Whereas, so common are the failures when native cows and bulls are employed, that it has passed into a proverb, " a good cow may have a poor calf."

It is therefore of the utmost importance that our bulls should be selected with a view to our wants, and that they should be of the pure blood of whatever breed we select, in order to transmit the qualities which we desire, to their offspring. If it be true—and in this county the fact will be very generally allowed—that the above-mentioned breeds are improved breeds, and therefore desirable, it follows, that the use of grade bulls is pernicious; because by them we constantly *breed out* the very blood that we desire to *breed in.* Take the instance of a bull one-half Durham and one-half native, crossed upon a native cow; the produce is three-quarters native, and but one-quarter Durham. And thus, in each generation, you diminish the proportion of Durham blood. By the same reasoning, bulls of pure blood will constantly improve our native stock.

The native bulls are a little of everything mixed up; and they beget their like in one respect, their calves being a little of everything a little more mixed up. Those then, who, as above, allow the English breeds to be an improvement, must, to be consistent, pronounce the use of native bulls an injury.

We are perfectly aware that it is unpopular doctrine, and that we run counter to the prejudices of many excellent farmers and estimable men; but as our opinions have been carefully considered, and we believe them to be well founded, it would be cowardice to withhold them.

A breed in all respects equal to the best British breed, and in some respects superior, could be made from our native

cows, by always selecting the choicest animals to be put to thorough bred bulls of a chosen blood. Care should be taken, however, not to mix many bloods. If, for instance, a Jersey bull be selected to improve the quality of our native stock, do not expose your heifer calves of his to get to any other than a bull of the same blood; thus one may, in time, build up a breed yielding a large quantity of milk of the very choicest quality.

Some of the contributors to the show of this year, attached importance to the fact, that their yearling bulls had served, in the one case, ninety and odd, and in the other, seventy and odd cows within the year. It is not good policy, in our opinion, to use a bull at all, before he is a twelvemonth old; but if from necessity used at any time before that period, and for a twelvemonth afterward, it is well to use him sparingly. The abuse of his powers at an early age, tells on the animal, sooner or later, and on his get.

In using bulls, farmers should know that a single leap, if thorough, is as effectual and is better than two or three. One of the best points of a bull, (assurances of which should be required of exhibitors,) is, that he is a sure stock getter. Every one, who has a stable of cows, knows the annoyance caused by sending a cow two or three times to no purpose; and to the milk farmer, this grows beyond a mere inconvenience, and becomes a severe pecuniary loss, forcing him sometimes to purchase a new cow to fill the place of one that, by the bull's inefficiency, failed to "come in" in season.

All which is respectfully submitted,

William S. King, *Chairman.*

Heifers.

The committee on heifers have the pleasure of reporting that the number of competitors for the premiums is twenty-seven, who have offered thirty-nine for examination; and we take great pleasure in saying that many of them are of superior merit. We have, after a careful examination, awarded the premiums as follows:

Jersey.—To Lyman Kinsley, of Canton, first premium, $3 00
There being none others of that breed offered, the second premium is not awarded.
Ayrshire.—Samuel J. Capen, of Dorchester, for his 2 years 6 months old, first premium, . . . 3 00
Samuel J. Capen, of Dorchester, for his 13 months old, second premium, ... 2 00
These being all that were offered.
Durham.—None of full blood offered, and no premiums awarded.
Devon.—B. V. French, of Braintree, for his two-year old, first premium, ... 3 00
John Fussell, of Roxbury, second premium, . . 2 00
Grade.—Aaron D. Weld, of West Roxbury, first premium, ... 3 00
Ebenezer Richards, of Dedham, second premium, . 2 00
Native.—Joseph Onion, of Dedham, first premium, . 3 00
Charles B. Shaw, of Dedham, second premium, . 2 00
Heifers in Milk.—Marshall P. Wilder, of Dorchester, first premium, ... 6 00
Aaron D. Weld, of West Roxbury, second premium, 5 00
Charles H. Bacon, of Dorchester, third premium, . 4 00
Best Heifer under one year old.—John Tucker, Milton, 2 00

Your committee, in consideration of a number of premiums not awarded, for reasons already presented, would respectfully recommend that a gratuity be awarded to the following gentlemen having animals of superior merit:—

To Lyman Kinsley, of Canton, one-half Durham, one-half Native, 2 years 5 months old, ... $2 00
To Edward King, of Dorchester, one-half Cream Pot, one-half Durham, 16 months old, ... 2 00
To Solomon Flagg, of West Needham, two grade heifers, ... 2 00
To Charles Sampson, of West Roxbury, Charles C. Sewall, of Medfield, and Charles S. Hammant, of Medfield, each, ... 1 00

Calvin Richards, *Chairman.*

Steers.

The committee on steers report that but three pairs of steers were exhibited. The premiums were as follows:—

To B. V. French, of Braintree, for the best pair of three years old, first premium, ... $5 00
To J. Willard Daniels, East Medway, second premium, 4 00
To Lyman Adams, Jr., Medway, for pair of two years old, second premium, ... 4 00

Nathaniel Tucker, *Chairman.*

Horses.

The committee appointed to award premiums on horses, having attended to their duty, beg leave to report.

The whole number of entries was twenty-eight, viz.:—

Two stallions, two single horses, two farm horses, one 4 years old colt, three 3 years old do., three 2 years old do., one 1 year old do., thirteen mares, with foal by side, and one pony.

Your committee award the following premiums:—

To Simeon Burr, of Foxborough, for the best single horse, a premium of $2 00
To Otis Johnson, of Sharon, for the best three years old colt raised in the county, a premium of . . 4 00
To J. H. Billings, of Roxbury, for the best two years old colt raised in the county, a premium of . . 3 00
The committee also recommend to Otis Cary, of Foxborough, for a fine mare colt, a gratuity of . . 2 00
To Dr. S. S. Whitney, of Dedham, for the best one-year old colt raised in the county, a premium of . . 2 00
For the best breeding mare, with foal by side, to Otis Cary, of Foxborough, first premium, . . . 7 00
To E. P. Carpenter, of Foxborough, second premium, 5 00

The four years old colt entered, does not come within the rules of the society, not having been raised in the county.

Your committee do not think either of the farm horses entered entitled to a premium.

Only one of the two stallions entered came within the rules of the society, and that one your committee do not think entitled to a premium; but being the only one entered which will stand in the county the ensuing season, they recommend a gratuity to the owner, E. B. Metcalf, of Franklin, of $5. The other stallion, "Tricolor," is recommended by as pure a pedigree as any horse in the county, and exhibits many fine points; but, as his owner is about to remove him to another part of the State, your committee did not consider themselves authorized to award him a premium.

All which is respectfully submitted,

Wm. H. Richardson, *Chairman.*

Working Oxen.

There were eight pairs of oxen entered for premium, and Mr. A. D. Weld, of West Roxbury, entered one pair for exhibition only. Mr. Weld had two pairs of oxen which reflected credit to the owner, and were creditable to the show. Mr. Weld's teamster, Mr. Andrew T. Meserve, is entitled to great credit for the mild treatment of his team. Mr. S. J. Capen, of Dorchester, had a very fine yoke of four years old cattle, well trained; their necks were sore, which caused them to flinch a little when they first started. Mr. J. W. Daniels, of Medway, had a very good pair of oxen, remarkably well trained; in short, the teams were all good, and creditable to the owners and to the society. Yet some of the teamsters made so free use of the lash, that it was almost dangerous for the committee to get within a reasonable distance.

The committee, as did the committee of last year, would most cheerfully encourage and recommend the encouragement of well trained working oxen, and discourage too free a use of the lash. We hear great complaint among the farmers, that they cannot get good teamsters. We think one reason is, that they allow the whip to be used too much; too much praise cannot be given to the teamster that is merciful to his team.

There was but one town team presented for premium, and that was from the town of Dover. There were thirty-two pairs of oxen in the team, all of which were in good working order, and the committee consider it very creditable that so small a town as Dover, with only six hundred inhabitants, should turn out so large a team, and still leave some ten pairs of oxen at home. The committee were very much gratified with the attention given to them by the Dover teamsters, and take this opportunity to tender their thanks for their ride from the plough field to the spading match. Although their seats were not all cushioned, and some of the springs were left from under the wagon, they enjoyed it very much.

The committee cheerfully recommend to the town of Dover, the first premium on town teams,				$20 00
To S. J. Capen, of Dorchester, working oxen,	1st	prem.,		8 00
To A. D. Weld, of West Roxbury,	"	2d	"	6 00
To J. W. Daniels, of Medway,	"	3d	"	5 00
To J. P. Clarke, of Medway,	"	4th	"	3 00

Swine.

The number of swine entered this season for exhibition or premium was unusually large. The animals were mostly of the Suffolk breed, and many of them were specimens of superior beauty and rare excellence. This breed seems to be universally admired, and favorites of all. It is gentle and quiet in disposition, always fat, and not difficult in regard to diet. An increased interest is evidently abroad in this department, and the hog is taking that high stand among other animals, which its own intrinsic merits so justly deserve. New England should raise her own pork. Both economy and the palate require it. Hence the *breed*, *food*, and *mode of keeping*, should be objects of particular note, by every economist and lover of good pork.

Mr. Ezekiel Peabody, of the town farm of Needham, exhibited six pigs, half Suffolk, six months and ten days old, of superior beauty and merit. Their general uniformity of size was remarkable, as well as their own individual good qualities.

Mr. P. also exhibited their mother, a fine native sow, one year and six months old, worthy of note. Dr. Ayling, of Grantville, entered a noble breeding sow,—a cross of the Suffolk and Middlesex,—five years old, with a litter of six pigs five weeks old. His sow was an animal of superior excellence and worth, both as it regards her size and good proportions, and also as an extremely successful breeder; and had the committee a written statement of facts in *season*, she would have taken one of the highest premiums. Dr. A. also exhibited a pure Suffolk sow, one year old.

The Hon. M. P. Wilder, of Dorchester, exhibited a fat Suffolk hog, of no ordinary size and beauty, and also three Suffolk pigs, of good size and points, every way worthy of special notice.

The Hon. B. V. French, of Braintree, favored us with a pure Suffolk sow, with a litter of eleven pigs, five weeks and five days old. This was indeed a fine family, and well worthy the attention of every passer by. The pure Suffolk traits and peculiarities seemed more prominent in this family than any other on the ground. As a whole, they were rare specimens of the Suffolk breed.

A very large Suffolk boar, two years and four months old, owned by Calvin Deane, of Canton, took a conspicuous place at the exhibition.

Mr. Lyman Kinsley, of Canton, had a superior fat hog, three-quarters Suffolk, thirteen months old, weighing 556 lbs. This was a rare fellow, and no fat hog on the ground surpassed him.

Mr. H. L. Stone, of Grantville, also exhibited a fat hog, thirteen months old, three-quarters Suffolk, of superior merit, his age and keeping being taken into due consideration. Mr. S. also offered, for premium, a breeding sow, three-quarters Suffolk, and a litter of her pigs, five in number, seven-eighths Suffolk. They were all fine animals, especially the latter. His Suffolk boar was a good looking animal, and of good parts, but not so active and sprightly as a gentleman of his station should be.

Mr. Alvin Alden, of Dedham, exhibited two Suffolk pigs, eight and nine months old. They were large and well proportioned, having the Suffolk qualities very well delineated.

Rev. C. C. Sewall, of Medfield, had two extra hogs, three-quarters Suffolk, thirteen and sixteen months old, weighing 414 and 460 lbs. They looked thrifty and fat, though Mr. S. said he had not yet commenced fattening them.

Mr. Luther Gilbert of Grantville, entered a Suffolk boar, sixteen months old, which the committee thought worthy of high commendation. He was of good size, well proportioned and active, and exhibited every trait of a useful animal. Mr. G. had also a fine imported Middlesex sow, three years old, worthy of special attention, being the only one of that excellent breed on the ground. He also exhibited a pure Suffolk breeding sow, with five pigs of no ordinary character.

Mr. S. S. Seagrave, of West Needham, offered a broad-shouldered, straight-limbed, and extremely well-proportioned three-quarters Suffolk boar, fifteen months old, which attracted universal notice and admiration. Among his other extra qualities, he seemed active, hardy and robust. Mr. S. had also on the ground, a healthy, active, breeding sow, and a litter of seven of her pigs, three-quarters Suffolk. This seemed to be a happy cross for a common, every day hog, for almost every body.

Mr. H. H. Williams, of West Roxbury, offered a Suffolk boar, fourteen months old, inferior to none on the ground, of his age. The committee awarded him the second premium, on the ground that he was younger than Mr. Gilbert's; and though the next day they learned that Mr. W. had not himself owned this pig long enough to strictly claim a premium, still they did not see fit to alter their former decision. Mr. H. had also two good Suffolk pigs four months old, claiming a good share of attention.

Mr. Hiram Jones, of Dover, entered a large, well proportioned breeding sow, seven-eighths Suffolk, which took a high rank among the many. He also entered nine weaned pigs, five months and nineteen days old, three-quarters Suffolk, and one-quarter Mackay. This litter of pigs, taken as a whole, was, in the opinion of the committee, worthy the first premium.

Mr. W. R. Huston, of Dedham, had two pigs, three-quarters Suffolk, eleven weeks and three days old, weighing 81 and 83

lbs. These looked healthy and hardy, and were ornaments to the pig tribe.

Mr. John Fussell, of Jamaica Plain, honored us with a robust pair of the Suffolk breed two years old. Their age and hardy appearance gave them an acceptable rank among their competitors.

J. and J. E. Eaton, of Dedham, exhibited a Suffolk boar, sixteen months old. This pig is looking up towards a high station among the favorites.

A Suffolk boar and sow, owned by Mr. John Deane, 3d, of Dedham, deserve a good place in the present hog-scale of excellence. At last came those superior Suffolk pigs, a barrow and sow six months old, owned by Mrs. George Hallet, of Roxbury. These were indeed specimens of excellence every way well proportioned,—round and plump,—speaking well for the crib of their mistress.

Premiums awarded.

Boars.—To Luther Gilbert, of Grantville, . . .	$6 00
To H. H. Williams, of Roxbury, ...	5 00
" S. S. Seagrave, of West Needham, . . .	4 00
Breeding Sows.—To Luther Gilbert, of Grantville, .	6 00
To B. V. French, of Braintree, ...	5 00
" H. W. Jones, of Dover, ...	4 00
" S. S. Seagrave, of West Needham, a gratuity,	2 00
" Dr. Ayling, of Grantville, a diploma.	
Weaned Pigs.—To H. W. Jones, of Dover, . .	5 00
To E. Peabody, town farm, Needham, . . .	3 00
" H. L. Stone, of Grantville, ...	2 00
" A. D. Weld, of West Roxbury, a gratuity, .	2 00
Fat Hogs.—To Lyman Kinsley, of Canton, . .	6 00
To Rev. C. C. Sewall, of Medfield, . . .	5 00

For the committee,

NATHAN LONGFELLOW, *Chairman.*

NEEDHAM, Oct. 20, 1852.

Poultry.

The committee on poultry award the following premiums:

Best pair	Spanish,	C. B. Ward, Dedham,	$2 00
" "	Black Shanghaes,	A. White, Randolph,	2 00
" "	White "	J. S. Drayton, Dedham,	2 00
" "	Marsh "	A. White, Randolph,	2 00
" "	Chittagong,	Charles Sampson, W. Roxbury,	2 00
" "	Bolton Grays,	E. Stone, Dedham,	2 00
" "	Guineas,	Henry Tucker Milton,	2 00
" "	Sebright Bantams,	H. H. Williams, West Roxbury,	2 00
" "	Barnyard fowls, (Dominique)	Levi Smith, Sharon,	2 00
" "	Ducks,	David Thayer, Braintree,	2 00
" "	Poland fowls,	Charles Small,	2 00
" lot	Geese,	C. R. Belcher, Randolph,	3 00
1st best lot	Turkeys,	John Dean, Dedham,	3 00
2d "	"	Lemuel Kingsbury, Needham,	2 00
1st "	Fowls,	A. White, East Randolph,	4 00
2d "	"	C. Sampson, W. Roxbury,	3 00
3d "	"	H. H. Williams, W. Roxbury,	2 00
Gratuity to		Geo. Dorr, Dorchester, for Bolton Grays,	2 00
" "		Charles L. Copeland, for Bremen geese,	2 00

A diploma to Charles Sampson, for his fine Black Shanghaes.

Eben Wight, *Chairman.*

Dedham, Sept. 29, 1852.

Bread.

The committee on bread, having attended to the duty assigned them, beg leave to submit the following report:

Forty-one specimens of bread were offered for premiums, of which twenty-three were of wheat, ten of rye and Indian, four of wheat and Indian, and four of unbolted wheat.

Wheat bread.—Your committee award to Mrs. Smith Gray, of Walpole, for wheat bread, the first premium of $3 00

To Mrs. Winifred Kelley, of West Roxbury, the second premium of 2 00

Unbolted wheat bread.—For bread made of unbolted wheat, we award to Mrs. E. W. Longfellow, of Needham, the first premium of 3 00

To Mrs. Winifred Kelley, of West Roxbury, the second premium of 2 00

Wheat and Indian bread.—For bread made of wheat and Indian, we award to Mrs. S. J. Capen, of Dorchester, the first premium of 3 00

To Mrs. L. B. Keyes, of Dedham, the second premium of 2 00

Rye and Indian bread.—For bread made of rye and Indian, we award to Mrs. Sarah S. Kollock, of Canton, the first premium of 3 00

To Mrs. William Bacon, of South Walpole, the second premium of 2 00

Several excellent specimens of bread were not considered entitled to premiums, because not accompanied by a receipt, as required by the printed regulations. The committee, however, unanimously recommend that a gratuity of $2 be given to Mrs. S. W. Barber, of Brookline, for perhaps the best loaf of wheat bread offered; but which was not admitted to competition for the premiums, because unaccompanied by a receipt.

All which is respectfully submitted,

EDMUND QUINCY, *for the committee.*

DEDHAM, Sept. 28, 1852.

BUTTER.

The committee on butter report that three lots were exhibited, of 40 lbs. each, for the premium of twenty dollars, the same to be given for use at the society's dinner. The committee

award to Rev. C. C. Sewall, of Medfield, the prem. of $20 00
For the lot of 40 lbs. offered by Mr. G. F. Adams, of Medfield, the committee recommend a gratuity of 10 00
For the best product of butter made from the 20th of May to the 20th of Sept., four months, not less than 20 lbs., to Mr. Aaron Bacon, of Dover, the first prem. of 10 00
To Mr. John Mansfield, of Needham, the second prem. of 8 00
For the best box of butter, of not less than 12 lbs., to Mr. Jas. R. Fisher, of Dedham, the first prem. of . 6 00
To Mr. G. Crosby, of Medway, the second prem. of . 4 00
To Mr. G. F. Adams, of Medfield, the third prem. of . 2 00

For the committee,

John Gardner, *Chairman.*

Dedham, Sept., 1852.

Roots and Root Culture.

The committee on roots and root culture, submit the following report:—

That but one claim was entered for a premium. This was by Perez L. Fearing, of Dover. It was for a field of carrots. Mr. Fearing's statement, which will be appended to this report, gives an account of his mode of cultivation, of the expense and net profits of the crop. The committee award to Mr. Fearing the society's premium of $5.

The committee add, that the example of Mr Fearing is worthy of imitation; and that the profits in his case hold out strong inducements to others to attend to the cultivation of root crops.

Ralph Sanger, *Chairman.*

Dover, Dec., 1852.

Perez L. Fearing's Statement.

The ground on which I raised my carrots, which I offer for premium, measures one-half acre, one and six-tenths rods. It

was in carrots last year by E. Perry, Esq. I spread two and one-half cords of manure, and ploughed the ground twice, and harrowed it once in the spring. About the middle of May, I sowed it in ridges about twenty-eight inches apart, and sowed it by hand, one row to the ridge; this work was done by one man and boy in one day. The first weeding was done as soon as the carrots were up, by a boy, in one day and a half; I then hoed it over with a hoe within an inch of the carrots. This was done by a man in one day. I then run the cultivator through the rows once. The second weeding was done by a boy in about one day. I then thinned the carrots, from four to six inches apart, and hoed them same as the first time, and run the plough and cultivator through once each, which was done in about two days by one man. I commenced harvesting about the 1st of November; it took two men two days each, and one boy two and a half days; horse, one and a half day. I had 12,869 lbs.—six tons, 869 lbs.

The expense of 2½ cords of manure, . . .		$12 50
" " hauling manure, . . .		1 00
" " ploughing, harrowing, &c., .		2 00
" " seed, ...		50
" " sowing seed, ...		1 50
" " first weeding, ...		50
" " second "		75
" " cultivating, ploughing and hoeing,		3 50
" " harvesting, ...		6 75
		$29 00
I have sold part of them at $12 per ton; at that price they would amount to . . .		$77 21
Expenses, ...		29 00
Net profit, ...		$48 21

I herewith send you a certificate of the weight. I have not measured the land, as it was measured last year.

Dover, Nov. 9, 1852.

This certifies, that I have weighed three baskets full of carrots raised by P. L. Fearing, and they average 95 lbs. to the

basket; and have counted the number of baskets as marked down, and find the amount 143.

LEWIS SUMNER.

DOVER, Nov. 9, 1852.

FRUITS AND FLOWERS.

The committee on fruits and flowers, respectfully report that they have attended to the duty committed to them, and awarded the following premiums :—

Apples.—For the best collection, to B. V. French, of Braintree, first premium of $5 00
To A. D. Williams, W. Roxbury, second prem. of . 3 00
To Moses Kingsbury, W. Dedham, third prem. of . 2 00
For the best dish of apples, to Lewis Davenport, of Milton, a prem. of 2 00
Pears.—To Marshall P. Wilder, of Dorchester, first prem. of 5 00
To S. Downer, Jr., of Dorchester, second prem. of . 3 00
To A. D. Weld, W. Roxbury, third prem. of . . 2 00
For the best dish of pears, to Samuel Walker, of Roxbury, a prem. of 2 00
Peaches.—First premium not awarded.
To Lewis Davenport, of Milton, second prem. of . 3 00
To Lewis Willard, of Walpole, third prem. of . . 2 00
Grapes.—For the best collection of foreign grapes, to Charles Sampson, of W. Roxbury, first prem. of . 5 00
To Lyman Kinsley, of Canton, second prem. of . . 3 00
To Mrs. G. Hallett, of Roxbury, a gratuity of . . 1 00
To A. Bowditch, of Roxbury, for a basket of mixed fruits, a gratuity of 2 00

The committee regret that there should have been no collection of native grapes presented for the prize. There were several single specimens of the native grape, but nothing that could be called a collection. It is to be hoped that the attention of cultivators will be called more to this subject. Though Norfolk county will hardly become a wine growing region, it

is yet true that there are excellent grapes amongst our native kinds, and that their culture may be made both profitable and useful. The committee recommend a gratuity of $1 to Mr. E. G. Tucker, of Milton, for his excellent specimen of native grapes, with the accompanying letter, giving an account of its early maturity and prolific bearing.

The committee further recommend a gratuity of $1 to be given to Mr. William McKendry, of Canton, for his very fine specimens of Porter and Baldwin apples.

The committee wish to notice the remarkable statement of Mr Charles Pierce, of Milton, of the product of two Dix pear trees, viz. :—

1849.—Both trees blossomed three times, and fruited. 1850. —Both trees blossomed three times, and one fruited. 1851.— One blossomed six times, the other four, and fruited three times each. 1852.—One blossomed seven times, the other three times. The one that blossomed seven times, fruited each time. The first crop perished, the remaining six accompany this statement.

The committee cannot conclude without offering the thanks of the society to the numerous public spirited contributors, who aided in making this show of fruit one of the finest that has been seen in the country. There were very many who deserved both thanks and reward, had the resources of the committee been as large as their will. They hope that while the laureled competitors of the Massachusetts Horticultural Society continue to grace our board with their treasures, their brethren of more humble pretensions will yet not be discouraged from adorning it with their beautiful fruit, even though they fail of especial honors.

Flowers.—The committee regret that the arrangements for exhibiting the flowers were unavoidably such that they could not do them justice, nor the flowers do justice to themselves. They earnestly hope that something may be done before another exhibition, in the way of providing vases and glasses suitable for this purpose.

They likewise suggest the expediency of appointing a separate committee on flowers, as the duty of looking at and judging the fruit is very arduous, and leaves little time or strength for attending to the flowers.

They have awarded the following premiums:—

For the best collection of flowers—

1. Parker Barnes, of Dorchester, . . .	$3 00
2. J. Nugent, of Roxbury, ...	2 00
3. B. V. French, of Braintree, ...	2 00
4. E. M. Richards, of Dedham, . . .	1 00
5. Mrs. Ellis Bacon, South Walpole, bouquet, .	1 00
6. Mrs. J. H. Blackman, of Sharon, " .	1 00
7. Mrs. W. R. Sumner, of Dedham, for very fine asters, a gratuity of	1 00

F. Cunningham, *Chairman.*

Grain Crops.

There were entered for premium, two crops of wheat, by gentlemen whose cultivation of this valuable grain has been noticed in former reports of the society. Capt. Horatio Mason, of East Medway, raised, on very little more than one acre of ground, 33 bushels of wheat, at a cost of about 68 cents per bushel, and a net profit of about 80 per cent. Mr Sewall, of Medfield, raised on about nine-tenths of an acre, 19 bushels; at a cost, we are informed, of about 60 cents per bushel, and yielding a profit of about 70 per cent. In both these instances, the net profit given might fairly be increased 33 per cent. by a reduction of the expense of harvesting the crop, which we consider to be fully balanced by the value of the straw. Both are examples of good husbandry attended by remunerating success. We have awarded to Capt. Mason the first premium of $6, and to Mr. Sewall, the second premium of $4.

Another and larger crop was raised by Mr. S. Frothingham, Jr., of Milton, which was not entered, however, for premium. An account of this crop is appended to the remarks which follow this report, on the culture of wheat in this county. In accordance with the general purport of these remarks, we believe that much of the soil in this county is as well adapted to the cultivation of this, as of any other cereal crop. The statements annexed to this, and to previous reports of the

society, fully warrant this belief. The hidden causes, which formerly rendered almost universally futile any attempts to raise wheat here, seem to have been removed; or have ceased to act so injuriously. The same soil which had once been regarded as wholly unsuited to this crop, is now seen to yield large and profitable returns of wheat, with as much certainty as of any other grain. We hope that the subject will receive full consideration by our intelligent farmers, and that crops of wheat will become as common as crops of oats and rye, or Indian corn, in the county.

One of the most frequent obstacles to the cultivation of wheat, has been the apprehension of mildew to injure or destroy the crop. "A custom prevails in some parts of England, of sowing a small quantity of rye with the wheat crop, on all the lighter description of soils. About two quarts to the acre is the general proportion. Much advantage evidently arises from this mixing of grain. The wheat is more plump than it would have been if sowed alone, and a greater quantity of wheat is grown upon the acre. On light soils, especially if they are in high condition, wheat, when grown alone, is apt to be mildewed; but it is very rare to find this disease where a small quantity of rye has been mixed with the wheat. This preservation can only be accounted for by the shelter which the rye affords to the wheat. No difficulty occurs in the ripening of the two grains, as they are both fit to cut at the same period. In threshing, they are kept as distinct from the clean wheat as possible, and the meslin is ground for household bread."

One crop of barley was entered for premium, by Capt. H. Mason, of East Medway. He has raised upon two and a quarter acres of ground, 78¾ bushels, at a cost of about 54 cents per bushel, and a profit of more than 50 per cent. We consider barley as an exceedingly valuable crop for fattening beef cattle and swine, and especially good when land is to be sown down with grass seed and grain. We have awarded to Capt. Mason the first premium of $4.

Three crops of Indian corn were entered for premium. We have awarded to Mr. William Pierce, of Needham the first premium of $8 for a crop of 90 bushels shelled corn, per acre, raised at a cost of about 40 cents per bushel, yielding a net

profit of 125 per cent. We apprehend there may be some error or omission in the statement given of the actual cost of this crop, but not such as to reduce very largely the net profits of it. To Major Jared Allen, of Dover, we have awarded the second premium of $5, for a crop of 88$\frac{4}{7}$ bushels shelled corn per acre, raised at a cost of about 70 cents per bushel, and a profit of more than 30 per cent. The third premium of $3, we have awarded to Mr. Sewall, of Medfield, who has raised on 179 rods of ground, 62 bushels shelled corn, or about 56$\frac{1}{4}$ bushels per acre. This corn was very heavy, and nearly the whole crop consisted of well-filled, sound ears. A part of it was unfortunately badly eaten by worms, or it would otherwise have yielded a much larger return. In addition, however, to the crop of corn, a large amount of first rate pumpkins and of flat turnips was harvested from the same ground.

Several statements of fine crops of corn and of other grains, raised by different gentlemen in the county, were also presented. We consider them worthy of attention, as affording examples of good cultivation and large profits; and, accordingly, have annexed them, together with those given by successful competitors for the premiums.

A single crop of white beans was also entered for premium. This was raised by Mr. H. W. Jones, of Dover, at a cost of about $1 27 per bushel, and a net profit of nearly 50 per cent. We have awarded to Mr. Jones the first premium of $6.

For the committee.

Horatio Mason's Statement.

The field of barley I offer for premium contains two and a quarter acres of land. Last year it was planted with corn, which was manured in the hill with six loads from the barnyard, and seven loads of green manure spread to the acre.

The 1st of May last, the land was again ploughed, then harrowed, then ploughed again, and twelve loads of green manure spread to the acre. The barley was sowed the last week in May, at the rate of about 2$\frac{1}{2}$ bushels to the acre. It was harvested July 25, and the product, at 48 lbs. the bushel, was 78$\frac{3}{4}$ bushels.

The early part of the season was wet and the ground heavy,

consequently it was some time before the grain came up; but at the last of June, it looked promising, and had not very dry weather followed, I think I should have had a much larger crop.

Barley is considered in this vicinity equal to the same number of pounds of corn, for fattening purposes, and is raised with less labor.

The expenses of the crop I have charged as follows:

To ploughing twice, harrowing, &c.,	$6 00
Manure, carting and spreading,	15 50
Six bushels seed, at $1 per bushel,	6 00
Sowing,	50
Threshing, cleaning, &c.,	7 80
Harvesting,	7 00
	$42 80
Cr. by 78¾ bushels barley, at 80 cents, per bushel,	63 00

I have charged nothing for the use of the land or taxes, for I believe the land is improved by the cultivation of the last two years to more than that amount.

Horatio Mason's Statement.

The field of wheat which you viewed, and which I offer for premium, contains by measurement one hundred and sixty-eight rods.

I did not intend to offer the whole field for premium, there being a row of large apple trees across one end of it, while, at the other end, the land was made so heavy by carting over it while it was wet, that the grain was very small.

About fourteen rods of the wheat was cut by itself, but owing to the appearance of rain when the grain was carted to the barn, it was all put together, consequently I was obliged to enter the whole.

The soil is a deep loam, what is called heavy land; upon which was spread last year twelve loads of manure, and eight loads put in the hill and planted with corn.

About the last of May, after ploughing the ground twice, 2¼ bushels of wheat were sowed and harrowed in. It was har-

vested the first week in August, and the product, at 60 lbs. to the bushel, was 33 bushels.

I have charged as follows:

Manure,	$7 00
Two ploughings,	2 75
Sowing, harrowing, and bushing,	1 75
Cradling, binding, and carting,	3 50
Threshing by horse power, and cleaning,	4 13
Two and a fourth bushels of seed, at $1 50 per bush.,	3 38
	$22 51
Value of 33 bushels of wheat, at $1 25 per bushel,	41 25

I consider the land in so much better state now than in 1850, that I have made no charge for the use of it and the taxes. The land is valued at about $70 per acre.

East Medway, Nov., 1852.

Charles C. Sewall's Statement.

The ground upon which was raised the wheat offered by me for premium, has been measured by Mr. John W. Adams, of this place, and contains 143 square rods. The amount of the crop is 19 bushels, or 21¼ bushels per acre.

The seed of this crop was a new variety of spring wheat, called *Java Wheat.* It was steeped in brine eighteen hours, then covered with lime, and sown at the rate of two bushels per acre. The ground had produced corn the last year, and had been heavily manured at the time of planting. In the spring of this year it was ploughed with the Michigan plough. Four ox-loads of compost manure were spread and harrowed into it. When the wheat had sprung up, about 2 cwt. of bone dust and 50 lbs. of guano, mixed with 6 bushels of wood ashes, were spread evenly over the ground.

The wheat grew finely at first, but was checked by the drought, and probably yielded less than it would have done in a more favorable soil, or in a better season. The soil is a gravelly loam. The wheat was perfectly free from smut.

The *exact* amount of cost of this crop cannot be given, nor can the exact profit be estimated until the grain is disposed of.

Medfield, Nov. 11, 1852.

William Davis's Statement.

The piece of land on which my rye was raised the present season (1852), was originally a low, hassocky meadow, on the side of a small brook, and which was reclaimed in the following manner: I began on one side by digging a trench, from four to six feet wide, and from two and a half to three feet deep, to the hard pan, throwing the mud all on one side, then filling the trench with gravel as high as the original surface of the meadow, then digging another trench and throwing the mud on top of the gravel, and so on until we had gone over the whole piece, thus raising the land from two and a half to three feet. As the work was done at odd jobs, we were a year or more before it was finished. In the spring of 1850 the ground was levelled, manured well, and planted with various kinds of vegetables, such as potatoes, corn, beans, beets, carrots, &c., which all grew remarkably well. In the summer of 1851 the land was summer-tilled, and early in August there were put on it about eight cords of compost manure, consisting of about one-third horse and cow manure, one-third meadow mud, and one-third old sumac from the tanner's, which had been well incorporated together in the barn cellar. The land was ploughed and sowed with one and a half bushels of rye; it was harvested and threshed out, and the most of it sold by weight of 112 lbs. to the bag of two bushels, and there were 48 bushels on one acre and five rods,—at the rate of 46½ bushels to the acre. The straw has not yet been weighed, but will be soon, and an account furnished.

The ground on which the above crop was raised was surveyed by me, and found to be one acre and five rods.

Charles Breck.

Milton, Sept. 28, 1852.

Please add to the statement of Mr. William Davis's crop of rye, the following account: The straw has all been weighed, and found to be 6,950 lbs. from the acre and five rods, which was sold for 75 cents per hundred, equal to $52 12½. The rye, 48 bushels, was sold for 95 cents, equal to $45 60. After the rye was taken off, the ground was ploughed, and without any additional manure was sown with grass seed and English

turnips. The crop of turnips has been sold on the ground, without harvesting, for $40. Realizing, the present season, from one acre and five rods of land, which a few years ago was almost worthless, the sum of $137 72½. The labor on the above crops was nothing more than usual with such crops, but no separate account of it was kept. The expense of filling up the meadow cannot be ascertained with certainty, but I should think it was not far from $300 per acre.

I will also add, that the hay and straw on the piece of Capt. Taylor, of which you have the statement for this year, have also been weighed, and found to be 3½ tons.

Charles Breck.

Milton, Nov. 15, 1852.

Charles Breck's Statement.

The following account of several grain crops lately raised in this town, if they do not come within the rules granting premiums for such crops, yet they may be worthy of preservation among the doings of the society.

The first two crops which I will mention, were those raised by Capt. Charles Taylor, whose statement is as follows:—"In the fall of 1850, during the month of August, I had a piece of ground ploughed which had been to pasture for a number of years, and was much overrun with bushes and blackberry vines. One acre and three-quarters, as was afterwards ascertained by measure, was spread with about seven cords of piggery manure, and well harrowed in; the piece was then sowed with three bushels of rye, about the 1st of September; the ground was then again harrowed, and left to take its chance. In the summer of 1851 it was harvested, threshed, and 68 bushels sold, and two bushels we had ground, making 70 bushels of good, clean, merchantable rye, besides about two bushels of screenings which were left, and there were three tons of good straw, as ascertained by weight. The ground was then again ploughed, and the stubble turned in. The scattering rye which was left upon the ground came up well, and when it was about three or four inches high, thinking to kill it, the piece was sowed with grass seed, and well harrowed.

The rye, however, continued to grow, as well as the grass, and did not appear to be injured in the least by the harrowing. The present summer, 1852, finding that there was a good crop of grain—rye and wild oats—as well as grass, I had it mowed, and the rye picked out as well as we could by hand, threshed and measured, and there were 35 bushels of grain and $1\frac{1}{2}$ ton of straw, as was ascertained by weighing about one-half, and estimating the rest. The hay from the same piece was estimated by good judges to be two tons.

"Making, the first year, from $1\frac{3}{4}$ acre, 70 bushels rye, at the rate of 40 bushels to the acre, and 3 tons straw; and the second year, from the same, 35 bushels rye, $1\frac{1}{2}$ ton straw and 2 tons hay; equal to 105 bushels grain, and $6\frac{1}{2}$ tons of hay and straw in two years. And the grass now looks well for a heavy crop next year."

The land on which the above crops were raised, was surveyed by me. It is adjoining a part of my farm, which I improve as a garden, was seen by me almost daily through the seasons, and although the statement seems large, I have no doubt is substantially correct.

Milton, Sept. 1, 1852.

William Pierce's Statement.

The acre of corn entered by me for a premium, was improved as a corn field last year. There were six cart loads of green manure spread, and one shovelful of compost manure in the hill, $2\frac{1}{2}$ feet apart. Last May, ploughed once, spread eight cart loads green manure, 25 to 30 bushels to the load, harrowed well, furrowed one way with plough, three feet apart, applied one shovelful of manure in the hill, $2\frac{1}{2}$ feet apart in the row. This manure was a compost of mud, loam, night soil and green manure, thoroughly composted. The corn was planted on the 22d and 23d of May, putting four to five kernels in the hill; ploughed twice between rows, hoed twice, and harvested the 25th of October. One rod was selected which was considered a fair sample of the acre. This rod yielded 18 quarts of shelled corn, weighing 59 lbs. to the bushel. The land was a black sandy loam. Value of land, $60 per acre.

Interest on land,	$3 60
Ploughing, once,	1 50
Harrowing and furrowing,	1 25
Applying manure,	4 00
One-half manure,	15 00
Ploughing, twice,	1 00
Hoeing, twice,	3 00
Cutting and securing stalks,	2 00
Harvesting corn,	5 00
	$36 35

The value of the crop was as follows, viz.:—

90 bushels of shelled corn,	$90 00
Top stalks,	5 00
Husks,	7 00
	$102 00

Needham, Nov. 10, 1852.

Jared Allen's Statement.

The acre of corn which I offer for premium, was in grass in 1851. It is composed of a black loamy soil, and was ploughed in September, 1851, ten inches deep; the corn was planted the 30th of May; the stalks were cut about the 10th of September. The expense of the crop was as follows, viz.:—

Green manuré, spread, three cords, at $5 per cord,	$15 00
Compost manure in the hill, four cords, at $4,	16 00
Ploughing and harrowing twice, and spreading manure,	10 00
Furrowing and planting,	4 00
Cultivating and hoeing, once,	3 00
Pulling weeds,	1 00
Cutting stalks and harvesting,	8 00
Interest on land, at $80 per acre,	4 80
Taxes,	40
Total,	$62 20

The value of the crop is as follows, viz.:—

Stalks and husks,	$20 00	

One-half of the manure unspent, . .	$15 50	
88$\frac{4}{7}$ bushels of corn, at 92 cents, . .	81 48	
		$116 98
Leaves net profit of		$54 78

One rod was selected on the third day of November, which was considered a fair sample of the acre. The rod yielded eighteen quarts of shelled corn, which weighed 31 lbs.; allowing 56 lbs. to the bushel, it makes 88$\frac{4}{7}$ bushels per acre.

Dover, Nov. 10, 1852.

Charles C. Sewall's Statement.

The ground upon which was raised the crop of Indian corn offered by me for premium, has been measured by Mr. John M. Adams, of this place, and contains one acre and nineteen rods. The quantity of corn produced, is found, by accurate weight and measure, to be 62$\frac{1}{4}$ bushels, or about 55$\frac{1}{2}$ bushels per acre.

The ground was broken up last spring, with the Michigan plough. Twenty-eight ox-cart loads of compost manure had been piled upon it last fall. Twelve ox-cart loads of green manure were spread and ploughed under the sod. One-half the compost manure was spread on the furrow, and harrowed into, and mixed with the soil. The rows were then marked out with a light horse plough, at the distance of three feet apart. The other half of the compost was put into the hills, which were two feet and a half apart, and the corn dropped upon it. The corn had been steeped in a strong infusion of copperas and saltpetre for twelve hours. A few rows were planted on the 12th of May, but a storm commencing, the remainder of the corn continued in the steep until the 17th of May, when the planting was finished. The corn was cultivated three times and hoed twice. That part of it which had been planted first, was badly eaten by worms; the rest was left uninjured. Pumpkin seed was planted very thickly with the corn, and at the last hoeing, turnip seed was sown between the rows. There were harvested, besides the corn, seven large ox-loads of finest pumpkins, and 40 bushels of large tur-

nips. Many small turnips were afterwards ploughed into the ground.

This corn was topped on the 8th of September, and was fit for harvesting on the 1st of October.

Not expecting to compete for a premium, I cannot give the exact amount of labor and expense bestowed upon this crop. I have entered it because I consider the corn to be a very valuable variety, especially for ground liable to suffer from early frost. The ear averages about eight inches in length, but is filled to the tip with large, heavy kernels. One bushel of ears has yielded 20 quarts of shelled corn, weighing 38 pounds.

Medfield, Nov. 11, 1852.

Aaron D. Weld's Statement.

As there will be a detailed report of the condition of my land in my statement to Cheever Newhall, Esq., under improved lands, &c., I must beg reference to that for the particulars, as it would be but a repetition in publishing the Transactions of the Society, merely remarking that the land was an old pasture, and this my second year's crop. The account annexed is the result for the crop of 1852.

My best acre produced 83 bushels of shelled corn; my next best 75½ bushels; and the six acres averaged 59⅙ bushels of shelled corn to the acre; showing a profit for the year 1852, of $242 50.

My manure was all composed of meadow mud and leaf mould, taken from the lots adjoining, and spoiled salt mackerel.

I have incorporated in my communication to Mr. Newhall a detailed account of the exact cost and increased value of the manure, and labor upon it, to which I also beg reference, and which will be published in the Society's Transactions.

The following is the cost and product of six acres of land planted to corn in 1852:

Cost.—Thirty cords of manure,	. . .	$115 00
Ploughing,	. . . . .	15 00
Harrowing,	. . . . .	3 25
Seed corn,	. . . . .	1 25
Planting,	. . . . .	12 00

Hoeing, ...	$18 00	
Harvesting, ...	12 00	
		$176 50
Yield.—358 bushels of corn at $1 per bush.,	$358 08	
Fodder, ...	60 00	
		418 00
Net profit, ...		$242 50

Weld Farm, Nov. 9, 1852.

Isaac H. Meserve's Statement.

The quantity of land on which I planted corn last spring, measured $5\frac{3}{4}$ acres. In the spring of 1851, about one-half of the piece was turned over and planted to corn, manured with compost of meadow mud and night soil, about five cords to the acre, and produced a very good crop. Last April I ploughed the other half of the lot twelve inches deep, harrowed it, then spread about six cords to the acre of compost of meadow mud, barn and hog manure, then ploughed together with the old ground cross-wise, without putting any manure on the old ground. I then harrowed and planted on the 12th and 17th days of May, putting one shovelful to three hills, of a compost of street, hog manure and night soil, well mixed, with four kernels in a hill. The top stalks were cut the 6th and 7th of September; I commenced harvesting the 24th of September. The piece produced 390 baskets of good corn; one basket was shelled and measured 34 quarts; there were 25 baskets of small corn, making 415 baskets, or a fraction over $76\frac{1}{2}$ bushels to the acre. The work was all done by inmates, with the exception of a teamster, when the team was required.

Brook Farm, Oct. 30, 1852.

Hiram W. Jones's Statement.

The half acre of beans entered by me for premium, was raised on soil of sandy loam on which beans were grown last year.

The last of May one and a half cords of unfermented ma-

nure were spread on it and ploughed in, not with a view of much benefiting the bean crop, but to prepare the land to receive grass seed in the fall.

On the 1st of June, nothing having been done to the land after ploughing, the beans were planted in rows, two feet apart, about eight beans in a hill, the hills twenty inches apart in the rows. The only after cultivation bestowed on them was one hoeing. They were harvested the first of September, and when threshed measured seven bushels and four quarts. They were of the variety called marrowfats. I think that if one-third more beans had been planted in each hill, the crop would have been one-fourth greater.

The value of the crop is	$14 00
The cost, " "	9 75
Profit, ...	$4 25

Dover, Oct. 20, 1852.

Report of the Trustees on the Culture of Wheat.

The subjoined statement is thought, by the Trustees, to be worthy of particular attention. It affords conclusive proof that wheat may be grown in Norfolk County, with as much profit as in more fertile sections of the country; and ought, therefore, to be held in more favorable regard as an article of culture in this vicinity.

We learn, from an authentic source, that the average crop of wheat in Massachusetts, for a period of ten years—from 1840 to 1850—was 18 bushels per acre; the average cost of cultivation, including interest on the value of the land, $18 per acre; and the average net profit on the cost of cultivation, $11 12 per acre.

In the instance here represented, we have a crop of 40 bushels per acre, yielding, at the given prices for grain and straw, (which do not seem unreasonably high,) a net profit of $31 07 per acre. The cost of cultivation was $73 21 per acre, which, it will be seen, is much above the average cost. The value of the land, however, is as much above the average price of tillage

lands in other parts of the county, it being eligible for building lots, in one of the most attractive places for a rural residence, near to the city. The wages of labor and the cost of manure were, also, it is probable, higher than are generally paid. So that an equal quantity of grain and straw might, in many places, have yielded a larger profit; a profit, too, which would not be liable to much diminution by any difference in the comparative value of those articles there.

It is stated, in the last report of this society, that wheat was grown in this county in 1851, by an intelligent and thriving, practical farmer, at a cost of about $23 21 per acre, yielding 21⅞ bushels of grain, valued at $29 10. But to this value of the grain, should have been added the value of the straw, which could not be less than $10, making the total value of the crop, $39 10, and the net profit, $15 89 per acre. If we estimate the grain at the price paid for that grown at Milton, it would be worth $38 38; and if the straw also be rated at a like proportional quantity and value, it would be worth $34 28. Making the total value of the crop $73 56 per acre, and the net profit of cultivation $50 35 per acre.

In Ohio, a wheat-growing State, the average crop for the same period of time, is represented to have been 20 bushels per acre; the cost of cultivation, including interest on the value of the land, $8; the value of the grain, 78 cts. per bushel, and of the straw, $3 acre; leaving a net profit of $10 60 per acre. In Indiana and Illinois, the average crop and cost of cultivation were the same as in Ohio; but the value of the grain was 3 cts. less per bushel; leaving a net profit of only $8 per acre.

We need not, however, go into any comparison between the cost and profit of this crop in this State, and in more productive sections of the country. We have instances enough at hand, presented in the reports of our own agricultural societies, for the last year, to prove that wheat may be grown as easily, and with as sure and profitable results in Massachusetts, as in Ohio; in Norfolk County, as in the valley of the Scioto or Miami. The Essex Society gives an account in the last annual report, of a crop of wheat grown in that county, and upon a soil, too, not the most favorable to this grain, which yielded 39 bushels per acre. Hampshire, Franklin and Hampden So-

ciety reports a crop yielding $37\frac{3}{4}$ bushels per acre. Hampden Society reports six crops, which yielded, respectively, $29\frac{11}{15}$, $30\frac{1}{2}$, $31\frac{7}{15}$, $33\frac{11}{21}$, $37\frac{1}{2}$ and 38 bushels per acre; affording, respectively, a net profit of $17 50, $31 52, $23 83, $27 42, $45 $87\frac{1}{3}$ and $30 30 per acre. Franklin Society reports two crops, yielding, respectively, 35 and $29\frac{5}{16}$ bushels per acre. The first of these afforded a net profit of $46 55 per acre. The value of the other is not stated. Berkshire Society reports seven crops, for which premiums were given, and one of them is stated to have yielded $28\frac{3}{4}$ bushels per acre. Housatonic Society reports *twenty-five* crops entered for premium, nearly all of which were good, giving promise of abundant returns for the labor bestowed. Plymouth Society reports one crop, yielding $24\frac{1}{2}$ bushels per acre. These facts have been gleaned from the last abstract of the reports of the several agricultural societies in the Commonwealth. Other and more minute statements may be found, probably, in the reports themselves.

It needs only that the attention of our farmers should be drawn to such facts, that a careful selection and thorough preparation of the soil for a crop of wheat be made, and the ordinary precautions of a judicious method of cultivation be adopted. We may then find this great staple article of consumption produced on our own soil, to an amount which shall make us much less dependent on other States than we now are, and at the same time add largely to the encouragement and comfort of the cultivators of that soil.

It may be of service to add here some facts and suggestions contained in the report on European Agriculture, by the late Mr. Coleman, whose attention was largely devoted to this subject.

Mr. Coleman says that "the average yield of wheat in Great Britain, was stated by men of political standing, and claiming to be well informed on the subject, at not more than 15 bushels per acre. An eminent agricultural writer placed it at 18 bushels some years since; men of sanguine temperament rate it at over 30 bushels. This seems to me much too low. Under good cultivation, I have scarcely ever found it less than 32 bushels." In another connection, he says, "I suppose there is no country where the average yield of wheat is so large as in England; and this product has *nearly doubled* within the last thirty or

forty years." He mentions several instances of crops ranging from 40 to 90 bushels per acre. These must, of course, have been produced on the best soil, and under most favorable circumstances. They are, however, encouraging, as results of improved methods of cultivation.

"In France," says Mr. Coleman, "the average crop in the best districts, is stated at 22 bushels." But he also furnishes statements of crops of 44, 50 and 72 bushels per acre, and adds that "the product of wheat in France has *nearly doubled* within eighty years." "In France," he continues, "which produces nearly 200,000,000 bushels, or more than half the crop of wheat grown in Europe, much of the soil is unfavorable to this grain, from its excessive dryness." This disadvantage, however, is overcome by the free use of the subsoil plough, the harrow and the roller. The subsoil plough, we think, may be used more freely, and with great benefit in Norfolk County, and the application of both harrow and roller to the growing grain, has, in our own experience, been followed by a large increase of the crop. "In Great Britain, the climate is particularly favorable to the growth of wheat, because of its equable temperature and its humidity. But its humidity renders the harvest precarious."

"Wetness is peculiarly unfriendly to wheat. Surface water that remains long upon the soil, or wetness, which stagnates and remains long in the soil, is highly prejudicial to it. The soil in which it is grown to most advantage, is a deep aluminous soil, not so clayey as to prevent its being thoroughly cultivated. It requires, therefore, a good mixture of calcareous or siliceous matter. A soil of excessive lightness or looseness is not favorable, and a hard and impermeable soil equally uncongenial." The application of clay to light soils, however, renders them well suited to the growth of wheat, and productive of large crops. "The soil cannot be too deeply cultivated for wheat. The roots of the plant descend perpendicularly, and spread themselves laterally and broadly in search of food. It would be a mistake to plough too deeply for this crop *at the time* of sowing the seed, and it is always useful to roll or tread the soil after it is sown; but it is desirable that it should find a deep, mellow bed below."

"Wheat cannot be too clean, or be kept too clean from

weeds; and for this reason it should follow a crop which has been kept thoroughly weeded."

"The method of sowing wheat, both in England and France," says Mr. C., "is generally in drills, or by dibbling, or planting a few seeds in hills, six or more inches apart, by a hoe. The crop is then cultivated and kept clean by the free use of the horse hoe or the scuffle hoe. When the seed is sown broadcast, the harrow is always drawn over the growing crop two or three times. The largest crops of which any account has been given, were grown in drills or in hills." It may seem useless in this country, where labor is so dear and every hand has work enough, to think of such a method of sowing and cultivating this grain. But if crops so extraordinary as are those represented, can be produced in this way—of 50, 70, and 80 or 90 bushels—it may be well worth its cost to make the trial of it, even here.

"The practice of drilling wheat," says Mr. Coleman, "is, in my opinion, greatly to be preferred to that of sowing broadcast; first, in the much more equal distribution of the seed; next, in the better opportunity which the wheat has of spreading, or tillering; and thirdly, in the opportunity of cleaning and cultivating the crop, which last is of great importance. I am of an opinion, borne out strongly by facts which have come under my observation, that wheat, in the early periods of its growth, is as much benefited by cultivation as any plant which is grown; and the injury which is done both to the growth of the plant and the sample of grain, by the weeds which ripen their seeds among it, renders the weeding or cleaning the crop of great importance."

Of manures proper to be applied to wheat, wood ashes seems to be, in all cases, most beneficial. Mr. Coleman remarks, that in 3,600 cases which came under his observation when occupying the office of agricultural commissioner in this State, the application of this manure was serviceable in every case, and the practice is to be commended. Lime, also, has a highly beneficial effect. We have ourselves used a compost of ashes, bone dust and guano, with great effect. Green manures should never be used, except with the crop preceding wheat, or upon sward ground, which is ploughed in the fall to receive seed in the spring. Liquid manures will produce re-

markable and beneficial effects, whether applied just before sowing, or during the growth of the crop. The almost universal preventive for smut in wheat, is, washing it in stale urine, or in a strong brine, and then sifting upon it lime.

Early sowing is strongly recommended, and generally practised, both here and in Europe. Reaping the grain before it becomes fully hard, is thought to be essential both to the quantity and quality of the harvest.

We are happy to observe that the subject is receiving increased attention in many parts of our State. In several of the reports to which we have referred, will be found instructive observations upon the culture of wheat, and well-drawn statements of crops which have been obtained. We commend them, in connection with the statement given below, to the careful study of our farmers, and especially of those who now regard wheat as an unprofitable crop to be grown in this section of the country.

S. Frothingham, Jr.'s, Statement.

Statement of a crop of wheat obtained from an area of two and one-tenth acres upon Milton Hill, Milton:—

Ploughing and labor,		$32 00
One-half of 10 cords manure, ($5 delivered,)		25 00
5 bushels wheat, $2 25, (4½ bushels planted,)		11 25
Reaping, threshing, &c.,		49 50
Interest on land, which cost $300 per acre,		36 00
		$153 75
Harvested 84 bushels, at $1 75,	$147 00	
" 6 tons straw, at $12,	72 00	
		$219 00
Net profit,		$65 25

The field was a tough sward, that had not been ploughed for 12 or 15 years. It had a good top-dressing in the spring, was mowed in July, ploughed immediately after, and the wheat put in about the 20th of September, so that it got a good hold before the hard frosts set in. The planting was experimental, as regards the wheat, the field being turned up only with a view to put it down to grass again the following

autumn, which has been done without the application of farther manure, an entire decomposition of the sod and manure not having taken place.

Though the area planted has two and one-tenth acres, yet the above product was obtained from somewhat less than two acres, in consequence of the lodgement of at least a third of an acre, which was either cut green or yielded nothing at harvest.

The threshing was performed by machine, in the open air, by which process there was a great waste; computed as high as four or five bushels.

In consequence of an over-estimate as to the size of the field, too much seed was unquestionably planted. The prices named are what were realized upon all that the owner could spare of both wheat and straw. One lot of 30 bushels supplied an order from Kentucky, through one of our leading agriculturists, for seed. The price of the wheat may be more than its worth in the market for grinding, but the owner would be sorry to part with what he reserved for his own use for double that sum, having the convenience of a mill near his residence, where it can be ground, a bushel or two at a time, and which, unbolted, makes certainly the sweetest bread that was ever eaten.

Peach Orchards.

The committee report that there has been only one orchard presented for examination, namely, that of Mr. Jason Reed, of Milton, whose statement is annexed.

As the premium of the society was offered for orchards in a "bearing condition," the committee had no authority to award a prize except to such as were in fruit.

The committee had the pleasure of examining Mr. Reed's peach orchards last year, and are happy again to bear testimony to the success which has attended his cultivation; but as a gratuity was then awarded to him, it has not been deemed expedient to grant another at this time.

By Mr. Reed's statement it will be seen, that, previous to the fruiting of his trees, he has cultivated other crops between them. This course may not be injurious, but unless the soil

is highly favorable, it is questionable whether this system ultimately would be economical. Your committee are confident that it would not be judicious when the trees are producing fruit.

The committee were happy to notice that Mr. Reed continues to mulch the ground around his bearing trees, the advantages of which, in our hot and dry summers, can hardly be over-estimated.

For the committee,

MARSHALL P. WILDER.

December 15, 1852.

Jason Reed's Statement.

The number of trees in the peach orchard offered by me for premium, is 111. They were set out the first week in May, 1850, in ground where the sward had been broken up the previous fall, being at that time one year old from the bud. No manure was applied at the time of setting, but fine loam from the surface of a cultivated field was used to cover the roots. In 1850 and 1851, about two-thirds of the orchard was planted with corn, and the other third with potatoes, all manured in the hill, at the rate of three cords to the acre, and about three or four quarts of leached ashes applied to each tree. This year no ashes have been applied, but double the quantity of manure has been put in the hill, and the whole planted with potatoes. The trees are set at the distance of 11 feet by 12 apart, and the crops have been planted in rows both ways, a tree taking the place of every third hill each way, in the rows in which they stand.

The above has generally been my mode of cultivation and management in all my peach orchards, containing now about 1,200 trees, and set out in different years from 1847 to 1852, inclusive.

After the trees have come to bearing, my practice has been to mulch them, covering over the whole ground. This answers many useful purposes. It preserves a more uniform temperature to the roots of the trees; it retains the moisture; it keeps the ground in a loose and mellow state; it prevents the growth of weeds and grass; it saves the fruit that drops from bruises

and stains; and, as the material decays, it acts as a manure and fertilizer.

The soil on which the proposed orchard stands, is a stiff, gravelly loam; the trees are all the *red* and *yellow* rareripe, and are now well set with blossom buds for another year.

Milton, Oct. 30, 1852.

Clearing and Enclosing Unimproved Lands.

The committee on clearing and enclosing unimproved lands report:—That there was but one application for the premium offered by the society, which was by Aaron D. Weld, Esq., of West Roxbury. The land the committee was called to view consisted of nine acres, two of which had been used for many years as a deposit for stones, collected from adjoining lands, and was considered by Mr. Weld of no value; the other seven acres was pasture land, and had been used as such for many years.

In the fall of 1850 he commenced upon this lot, dug up, collected and carted away the stones. In the spring of 1851, after preparing the land for a crop, he planted six acres with corn, which yielded 200 bushels, or 33$\frac{1}{3}$ bushels per acre. In the fall of the same year, clearing the entire lot of nine acres was completed. This spring he planted six of the nine acres with corn, which included the lowest and roughest part, and a portion of that in corn the previous year, which produced 358 bushels of sound shelled corn, or 59$\frac{2}{3}$ bushels per acre. Your committee examined this field of corn in the month of September, and found the land free from weeds, and in good order for any crop the coming year. The corn was planted in rows, three feet apart, and the hills in the rows two feet apart, with four stalks in a hill, which was judged to be the proper distance for this soil.

The corn was topped about the first of September, but your committee believe that by cutting the entire stalk at the bottom, and stooking until well dried, the fodder would be more valuable and the grain at least as good.

Mr. Weld's account of the quantity, quality and cost of the manure, the expense of cultivation, together with the cost of clearing, and the expense of laying 116 rods of stone wall, is hereto appended and makes a part of this report. It will be perceived by the statement of Mr. Weld, that the manure applied last year was principally meadow mud, and that he applied this year on the whole six acres, but five cords of barn-yard manure, together with twenty-five cords of meadow mud and leaf mould, composted with sixty barrels of tainted fish, which shows the great value of this, and similar matter when properly composted and applied to the land.

It further appears, by his statement, that by an expenditure of eighteen dollars per acre in reclaiming his land, which was unproductive and of little value, he has succeeded in obtaining valuable crops of corn, which have paid the expense of manuring and cultivating, and yielded a net income of fourteen dollars per acre annually for the last two years. In addition to this amount of income, the committee believe that one-third of the manure applied the last two years is yet unexhausted, that the land should receive credit for one-third of the cost of the manure so applied, ($7 30,) which, added to the income, as before stated, will increase the profits to $21 30 per acre annually.

The success of Mr. Weld, in the use of compost, we hope will induce the farmer to save all the refuse matter of every kind upon his premises, and obtain all he can elsewhere at a reasonable cost; to bear in mind that every animal and vegetable substance can be made to become the food for plants, and produce astonishing results by a judicious admixture with the soil.

The art of applying guano, bones, lime, clay and plaster of of Paris to the soil, is fast becoming known, and he who omits to inform himself of their proper application will find that he is unable to pursue his labors to a profit, that he cannot compete against the augmented profits arising out of a scientific application of manure and labor to the purposes of the farm.

Your committee believe that the object of our society is to improve and perfect agriculture; that we should award our premiums to those who produce the greatest quantity at the least cost, and nothing is more conducive to such results than

making and applying manures "in the best manner and with the greatest economy."

The committee, in consideration of the care and atention required to keep and render a correct account of the incidental expenses, and for the judicious course of management in reclaiming this portion of his farm, award to Mr. Weld the first premium of $15.

For the committee,

CHEEVER NEWHALL, *Chairman.*

DORCHESTER, Nov. 30, 1852.

Aaron D. Weld's Statement.

That part of my farm which your committee were requested particularly to examine, was originally divided into three lots, badly walled, and containing about four, seven, and nine acres each. The two smaller lots had been partially cultivated, and latterly used entirely for pasturing. The nine acre lot was rough, stony and unsightly, every part of it. Upon two acres of it stones had been carted for a long term of years, and left as tipped from the carts, and had grown up to alder bushes and wild roses,—full of springs, with a hard clay subsoil, so that there was no real value to it. The remaining seven acres were dry, worn-out pasture land, with a reddish subsoil. I commenced reclaiming this lot September, 1850, by removing the old division walls, and divided the land into two parcels, laid and reset 116 rods of wall permanently and well, for which I paid from 75 cents to $1 33 per rod, amounting to $128 54, which is not included in my estimate.

Drains were dug, three feet deep and three wide, with a free passage for water on the bottom, filled up with stone to the surface; this was upon that part containing about two acres. What stones were not placed in the ditches were placed in one large mound, and must contain from six to ten hundred loads, or more. A small portion of the lowest part was covered with soil from the ditches and loam from the old walls sufficiently deep to prevent their interference with any ordinary ploughing hereafter.

This lot was planted with corn in the spring of 1851, and I

gathered a crop of 200 bushels from six acres, or $33\frac{1}{3}$ bushels to the acre.

In the spring of 1852, six acres were measured and planted with corn; this took in the lowest and roughest part of the lot, and a portion of that planted the previous year with corn. The balance of the lot was planted with potatoes.

My best acre produced 83 bushels; the next best $75\frac{1}{2}$ bushels; and the whole produced 358 bushels of shelled corn, averaging $59\frac{1}{6}$ bushels to the acre.

The last year the corn was manured with 37 cords of meadow mud; worked over by 25 hogs during the summer. My crop this season was manured with 25 cords of compost, made with meadow mud and leaf mould from the adjoining lots, and sixty barrels of spoiled salt fish, in pickle, and about five cords carted from my barnyard.

I herewith submit, first, an account of the labor in preparing the land for cultivation, (which includes everything except the walls,) marked A. Second, an account with this six acres for two years, showing a profit of $167 75, marked B. That part planted with potatoes decayed in the hill, except the Davis seedling; they came out prolific, large and fine, while other varieties, on each side, under similar cultivation, were not worth the harvesting.

I should say in this account that I had pumpkins both years with my corn, and as I omitted a small portion of guano and plaster, which I experimented with, one will offset the other, though the value of the pumpkins was more to me than the cost of the guano, &c. My corn was planted in rows, three feet apart, and the hills not less than two feet apart, and four stalks left to the hill.

A.

Cost of labor in preparing nine acres of unimproved lands for cultivation (excluding the walls). Labor of men at cost, averaging 85 cents per day. Labor of oxen at 75 cents per day, which I consider at 25 cents more than cost of keeping.

1850.

Sept.	For 8 days' labor, cutting bushes, at 85 cts., .	$7 00
	" piling stone in heap, per agreement, .	4 50

1851.

April.	For 6 days' labor of men, at 85 cts., . .	$5 10
	" 12 " " oxen, at 75 cts., . .	9 00
	" drawing off stone, 9 days' labor of men, at 85 cts., ...	7 65
May.	" 8 days' labor of oxen, at 75 cts., . .	6 00
	" 19½ " " ditching, ...	16 58
	" 3 " " drawing stone, . . .	2 55
	" 2 yoke of oxen 1 day, ...	1 50
	" 7 men one day, at 85 cts., . . .	5 95
	" 4 yoke of oxen 1 day, ...	3 00
Sept.	" 1 horse 1 day, ...	1 00
Oct.	" 11½ days' labor of men, ...	9 77
	" 2½ " " oxen, ...	1 88
	" 40 " " men, at 85 cts., . .	35 00
	" 25 " " oxen, carting stone to ditch and heap, carting loam from old wall to low land and hauling stone, at 75 cts., ...	18 75
Nov.	" 21 days' labor of men, at 85 cts., . .	17 85
	" 11 " " oxen, at 75 cts., . .	8 25
		$161 33

B.

Cost of bringing into cultivation six acres of unimproved land, being a part of nine or ten acres, as per statement, and the crops from the same for two years, say 1851 and 1852.

1851.

For 37 cords of manure, valued at $4 per cord, as per following statement, ...	$148 00
" mud from my meadow, valued before removing it, at 50 cts. per cord.	
" digging the mud and carting it to upland, for drying, 75 cts. per cord.	
" carting same to barn cellar and back to field, $1 per cord.	
" estimated increased value of mud after having been worked over by my hogs, $1 75 per cord.	
" 2 yoke of oxen and 2 men 12 days, breaking up six acres, at $1 25 each, is $5 per day, . .	60 00

For harrowing—2 horses and 1 man 2 days, at $3 25 per day,		$6 50
" cross ploughing—3 teams 2 days—1 yoke of oxen and 1 man each, at $7 50 per day,		15 00
" planting—6 men 2 days, at $1 per day,		12 00
" " 1 horse,		1 00
" 1st hoeing, 8 men and 1 horse 1 day, at $1,		9 00
" 2d "		9 00
" seed corn,		1 25
" harevsting		12 00
		$273 75

1852.

For 30 cords of manure, valued as follows:—		
" 60 barrels of spoiled mackerel, in pickle, cost,	$30 00	
" carting same from Boston,	10 00	
" 25 cords of meadow mud and leaf mould, from lot adjoining, $2 per cord,	50 00	
" 5 cords of manure from barnyard,	25 00	
		115 00
" ploughing—2 teams of 1 yoke of oxen and 1 man each, 3 days, at $1 25 each, is $5 per day,		15 00
" harrowing—1 day, 2 horses and 1 man,		3 25
" seed corn,		1 25
" planting—10 days' work of men and 2 do. do. of horses,		12 00
" hoeing twice,		18 00
" harvesting,		12 00
		$450 25

1851. CREDIT.

By 200 bushels of corn, at 80 cts. per bush.	$160 00	
" fodder, worth	40 00	
1852.		
By 358 bushels of corn, at $1 per bushel,	358 00	
" fodder, worth	60 00	
		618 00
Net profit,		$167 75

Weld Farm, West Roxbury, Nov. 27, 1852.

SUGGESTIONS

To the Members of the Norfolk Agricultural Society, Written at the Request of the Trustees, by one of its Members.

BY B. V. FRENCH.

The writer does not intend to give instructions, or even hints, to the old farmers of this society. Those who have been long in practice, know better than himself what should be done, and if old practitioners, and not wise in their calling, they will be too old to learn. So to the new beginner alone will I address myself.

I will imagine you are about commencing on a worn out farm. If your buildings will answer at all, let them remain until you have fully determined what disposition to make of them. If new ones are to be erected, avoid a high elevation, let them be placed well back from the road, and thrown off at liberal distances one from another, as you can make no better use of your land than by giving ample space to your buildings. In your mansion, study coziness and a degree of simple elegance, rather than an imposing exterior. On this, I will not enlarge, but refer you to the works of the lamented Downing, on country houses, cottage residences and grounds. They contain plans and estimates adapted to every style, from the simple, yet taseful farm house, to the costly summer residence of the man of wealth and leisure. Before you move in this matter, obtain a survey of your lands, sit like a juror in your case before you commence, for it is enough for a farmer to do his work once; he cannot afford to take down and rebuild. Do a little at a time, bring around you all the information that you can command, and do that little well. We will presume that you have now decided on the location of your buildings, and the future enclosure of each of your fields. Let them be rather large, from ten to twenty acres each, unless you have a surplus of stone to be disposed off; in that case let your enclosures be no larger than to dispose of all your stone; first, dig up all the stone that can be raised by iron bars; two men should work at this together. Dig round and lay bare all the boulders, pull up by oxen such as can be canted out of their

beds by one, two, or three yoke of oxen, split or blast the remainder, till you get them all out; dig a trench from three to three and a half feet wide, and from two to four feet deep, which fill with your small and refuse stone. Fill your stone holes with the loam taken from the trench. Lay your wall on this foundation, a balance wall will be preferred. These trenches will take off much of the surface and spring water, and will be likely to keep open or free. If it remains too wet, procure from A. S. Babcock, Albany, some of his three and a half inch tile; follow his directions in laying them, which will be about three feet deep and twenty feet apart. These drains can be put down at less cost than any others, and will work well.

In your first ploughing you will have a broken sod; break up with Prouty & Mears' road plough, turn over the broken sods with a spade, to keep a clean, open furrow, follow with iron bars and take out all the loose stone, mark the fast ones to take out when the ploughing is finished. Carry off the small stones as fast as they are thrown out. Your lot is now ploughed, at an average depth of twelve inches. Put on this lot, if in season, about six cords of manure broadcast to the acre, together with six bushels of salt and thirty bushels of ground bone. The salt can be purchased from Ward & Co. at twenty cents, and the bone at thirty cents per bushel. Give the land a harrowing, and plant corn in drills for fodder for your cows, or sow broadcast a thimbleful of purple top stropped leaved turnip seed to every three square rods; sow them with your thumb and fingers carefully, roll the same with your farm roller. When the turnip seed is up in its smooth leaves, sow broadcast when it rains gently, or in a low atmosphere, 300 lbs. guano mixed with plaster, to the acre. The yield for this year will be quite satisfactory.

Second year plough deep, and follow with a subsoil plough, with sufficient team, to the depth of twenty inches from the surface. Cross plough and harrow, then put on ten cords good manure, together with ten bushels salt to the acre, plough it in shallow, harrow and plough till quite fine, then harrow with a light harrow, taking off as often as they appear, all the small stones. Now draw a line across the lot at each end, a rod from the wall, and mark out a small trench, then take two lines and stretch lengthwise of the lot, two feet from the wall

and three feet apart; let two men take a basket of potatoes, medium size, and place in a line twelve inches apart, and so continue the placing of the potatoes on the lot. You will in all cases begin at the cross lines marked out, and follow the lines, laying them down with care. Now with your heel, or what is better, take a piece of 4 by 5 joist, one foot long, make a hollow in the end of a proper size, reduce the end of the driver to the end of the cavity, and with a long, slim handle nailed on, drive each potato down just below the surface. As soon as your potatoes are up, without delay plough amongst them, turning the earth from them to the centre. If you have done your work correctly, you will now have about four inches of earth left undisturbed. As soon as all your potatoes are up, stir this narrow belt of earth with a narrow garden hoe; in about a week, when all the weeds will be vigorous, plough the earth back to the potatoes, and with a hoe, earth up and destroy all the weeds. Plough your headlands, harrow down, sow turnip seed, roll, and your land is finished till harvesting.

Third year plough fine, sow barley for fodder. Plough and harrow it in, then sow half a bushel of herds-grass, one bushel of redtop seed and six pounds of clover to the acre; brush in the grass seed, rake smooth, pick off the stones, and your work is done.

Fourth and fifth years mow it for its grass. Sixth year feed it off. Seventh year plough it cross-wise of your subsoiling, and fourteen inches deep, which is two inches deeper than when first ploughed, and bringing up two inches of subsoil. This should be done with the Michigan soil and subsoil plough. You have now a tender sod laid in the bottom of the furrow; you can now put on your manure and plough it in, without disturbing your grass seed. All sod land can be better ploughed in July than any other time; your sod will soon decay, and you will avoid grass in the furrow slice. You can feed it till July, plough up, and get a crop of turnips if you choose.

You have now one piece of land enclosed, ploughed to the depth of fourteen inches, drained, and in order for a garden, orchard, or any high tillage. When once enclosed, avoid all trespassing by man, beast or fowl, as you can have no perfect

tillage with these drawbacks. Having finished one piece, you can now begin another, until you have finished your farm, not forgetting at every time you break up the sod, to plough up two inches of the subsoil, until you have a free depth of 24 inches.

Essays.

The committee on essays submit the following papers, being all that have been presented for their consideration, viz.:—

A valuable communication on the Soiling of Cattle, embracing the experience of the venerable "*Farmer of Quincy*," for a period of about thirty years.

An essay on the Principles of Ploughing, by Sanford Howard, Esq.

A paper on the Cultivation of the Basket Willow, by John Fleming, Jr.

As these papers treat of entirely different subjects, the committee have deemed them worthy of publication, evincing, as they do, much practical knowledge and well-digested reflection.

The document by Mr. Quincy will be read with satisfaction and profit by all who have given any attention to the subject on which he writes, and from which will be derived much valuable information.

The essay on the Principles of Ploughing is written in that clear, perspicuous style, that "he who runs may read," and cannot fail to commend itself as possessing sound argument, based on practical experience.

The essay on the Basket Willow was furnished by one largely interested in its cultivation and manufacture, and who is familiar with the subject in all its branches. This paper was communicated to the Trustees by request, being such information as the author was willing to impart. For a further investigation of this subject, they recommend the Treatise about to be published by the author of this article.

The committee, believing that these articles will add interest to the present volume of the Transactions of the Society, and

with a view to encourage a continuance of similar communications, award,—

First. To the honored and senior member of the society, Josiah Quincy, their grateful acknowledgments for his kind compliance with the society's request to submit the result of his long and valuable experience. And, further to evince our gratitude for the service performed, the committee award him, instead of a pecuniary consideration, the diploma of the society.

Second. To Sanford Howard, for his essay on the Principles of Ploughing, a premium of ten dollars.

Third. To John Fleming, Jr., for a paper on the Basket Willow, its cultivation, &c., a premium of ten dollars.

The committee have ascertained that the author of the prize essay, "The Wise Man is Strong," published in the Transactions of last year, is Mr. Edward Lillie Pierce, of Dorchester.

For the committee,

Marshall P. Wilder, *Chairman.*

ON THE SOILING OF CATTLE.

BY HON. JOSIAH QUINCY, SENIOR.

To the Trustees of the Norfolk Agricultural Society:

Gentlemen,—In conformity with your request, I proceed to state "my experience, practice and views," on the subject of "soiling;" by which I understand the keeping cattle in the barn and feeding them with green food during the summer months, allowing them, daily, only a few hours' liberty of a yard, instead of feeding them in pastures. I do not, however, expect to communicate anything which may not easily be gathered from European writers; knowing, also, the great proportion of land in the State thought to be exclusively applicable to pasturage, I do not anticipate that any statement on the topic can be generally useful. Yet, to those farmers who have no land which may not easily be subjected to the plough, and to that increasing class who possess only ten, fifteen, or

twenty acres of land, the system is very important; a knowledge of my "experience and practice" may be useful, I therefore, comply with your request.

Between the years 1813 and 1821, I managed my farm, according to my own judgment, with satisfactory success. My attention was early drawn to the subject of "soiling" milch cows, in the summer season, instead of keeping them in pasture, from the following circumstances: My farm consisted of about 170 acres of good loam, level, without stone, almost every square foot of which might be easily made subject to the plough, with the exception of about twenty acres, which was salt marsh. Nearly half of it had been always applied to pasture, and had upon it, by estimate, four or five miles of interior fence, which could not have cost, originally, less than $1,600, and being post and rail, annually cost about $60 in repair. My farm being compact, the annoyance of having fifteen or twenty head of cattle driven night and morning to and from pasture, the loss of time in turning the plough, owing to the number of interior fences, and the loss of surface capable of being submitted to the plough, owing to the many head-lands, all drew my attention to the subject of "soiling," and its effects.

I found that European writers maintained that six distinct advantages were to be attained by the practice of "soiling," over that of pasturing cattle in the summer season.

1. It saved land.
2. It saved fencing.
3. It economized food.
4. It kept the cattle in better condition and greater comfort.
5. It produced more milk.
6. It increased, immensely, the quantity and quality of the manure.

Satisfied, in my own mind, of the bèneficial effects of the practice, I adopted it in the year 1815, and adhered to it until the year 1822, keeping from fifteen to twenty head of milch cows with such satisfactory success that in the year 1820 and 1821, at the request of the Trustees of the Massachusetts Society for Promoting Agriculture, I published in their Repository two essays, entitled "Remarks on Soiling," and which may be found in Vol. VI., pages 113–125, and in pages 334–

348 of that publication. In the year 1822, I gave up the direct management of my farm and leased it, from considerations wholly independent of any dissatisfaction with this practice or its results.

From that time, being occupied in various public offices in Boston and its vicinity, I exercised no superintendence of my farm for about twenty-five years. Resuming its management in 1847, I immediately returned to the practice of "soiling," resorted to the essays I had formerly published, to revive my knowledge on the subject, and from that time to the present have persevered in the practice with such entire satisfaction that no consideration would induce me to adopt any other. Since 1847, I have kept from thirty to thirty-five head of milch cows in this way, so that, in my mind, my experience is conclusive on the subject.

Every one of the advantages above stated, as being maintained by European writers, I have realized.

1. As to saving of land. One acre "soiled from," will produce as much as three acres pastured. This is enough, although some European writers assert the benefit is equal to one to seven. This great difference arising from the mode in which the one acre is cultivated and enriched for succulent products.

2. As to saving of fencing. It renders all interior fences useless. It enables the plough to pass through any length of land without turning, and saves all waste from headlands, which on each side of fences are usually the receptacles of unsightly and noxious weeds.

3. As to economy of food. Cattle will eat in the stall what they will reject in the field. They tread down and injure in the pasture, by dung or by stale, grass as good and almost in equal quantities with that which they consume, and by their feet injure its present product and future productive power.

4. As to the better condition and greater comfort of the cattle. In the stall they are supplied every day, five or six times, with food given regularly in sufficient quantity. And previous preparation having been made, they can never fail, let the season be what it will, of always having the best food and enough. When kept in the pasture they are left to their own care, subject to various accidents, to the ill effects pro-

duced by worrying one another, and to the constantly varying state of the pasture, which is always affected by drought and by the proportion of the number pastured, to the productive power of the field, which is often overstocked. In stall feeding, care having been taken to have sufficient succulent food prepared, they are, in as great a degree as is possible, kept independent of the variations of season and from other annoyances. Their greater comfort, in this mode of keeping, is one of the essential causes of their better condition. During the heat of the day they are kept under cover in the shade, secured from flies, from being worried by dogs or one another, from eating any noxious vegetables and from bad water.

A popular objection to this mode of keeping milch cows, is, that want of exercise must affect injuriously the health of the animal. To this, European writers, some of whom have kept in this way, large herds, reply, that they "never had one sick, or one die, or one miscarry," in consequence of this mode of keeping. After more than eight years' pursuance of the same practice, my experience justifies me in uniting my testimony to theirs on this point.

Another common-place objection to this practice in respect of milch cows, is, that their "milk cannot be so good nor in so great quantities, for want of exercise." Nothing can have less foundation in fact. Cows in the pasture, unless under some temporary excitement, use very little,—comparatively, no exercise. They usually walk a short time, slowly, collect their food and lie down to ruminate. The difference between this habit of theirs and the exercise obtained by walking about an hour or two hours in the day in a yard, and being employed in rubbing themselves against walls or posts, is little, if any, less than they get in the pasture. This exercise (a daily, thorough currying being added in their stalls) is quite as efficient to produce a healthful action of the system as any exercise, as it is called, in the pasture.

5. As to the quantity of milk produced by this mode of keeping, my own experience is, in my opinion, decisive in its favor. In early summer, and when pastures are fresh in grass, milk will be, for a short period, produced in somewhat greater quantities by keeping in pasture than by "soiling." But this advantage is of very short duration. As soon as pastures

grow short, and the annoyance of heat and flies commences, all the advantage is transferred to stall feeding. By comparison of the result of my milk produced, with that of my neighbors, taking both parts of the summer season together, I am entirely satisfied that the product, by well-conducted "soiling," is greatly in favor of this process.

6. As to the great increase in the quantity and quality of the manure, there can be possibly no question on the subject. Proper receptacles for this article being provided, free from rain and the sun, into which the stale from the cattle may be also received, the quantity and increased value of the manure thus kept, is, according to my experience, a full equivalent for all the labor and expense of raising, cutting, and bringing in the food, feeding, currying and other care of the cattle. No farmer need be told of the importance and absolute necessity of manure for successful farming, and to those who have not the means of purchasing that article, the mode of "soiling" is of all others the most certainly productive of it, both in quantity and quality.

As to "my practice," in soiling, it relates, 1st. To the quantity of land to be cultivated for the purpose of preparing succulent food; 2d. To the particular articles to be thus cultivated, and 3d. To the times they are to be sown, so as to effect a regular succession of such food.

1. As to the quantity of land to be cultivated. According to my experience, one square rod of land, of rich loam in high tilth in grass, oats, barley, or Indian corn, is enough for the support of a cow a day, if cut and delivered to her in the barn. As, however, there is a great difference in the state of land and in its productive power, and as it is important there should be no failure in succulent food, my practice has been to cultivate one and a half square rods of land per day for each head of cattle I intend to "soil." And on this basis I make my calculations in the spring of the year; for the quantity to be sown, at every succeeding period, when to secure a regular succession of such food, a new sowing is required. To make this calculation sufficiently exact, the length of time it will take the article sown to come to maturity so as to be fit to cut, and the length of time it will afterwards continue succulent, are to be considered. The time it comes to such

a state of maturity, is, of course, the time at which it may be relied upon for "soiling." A like reliance may be placed on the time it will continue succulent. The general knowledge of practical farmers and experience will easily give information on both points.

If any article sown in the spring will come to maturity on the 1st of July, and will continue succulent ten days, fifteen square rods of succulent food will be wanted for each cow "soiled;" one cow will, therefore, consume fifteen square rods during that period, and ten cows will require one hundred and sixty rods, or about an acre of such food for their support. On this basis of calculation I have always found the number of square rods to be sowed, for such a period of succulency of the plant is sufficient for about such a period of feeding, viz.: ten days. On this calculation I have safely "soiled" from thirty to thirty-five head of cattle, adding one acre of preparation for every ten head.

Should any one, however, adopt this practice for the first time, I should advise the preparing two square rods for each cow, to guard against every contingency to which a first attempt may be liable. For nothing will be lost, if the food should prove more than was required. The surplus becomes a resource for the winter keeping, after it is too rank for "soiling."

2. As to the particular articles to be thus cultivated. I have tried many besides those above-mentioned, such as millet, lucerne, cabbages, peas, the tops of carrots, beets or turnips. Each may be usefully applied in its proper season, particularly the three last. And whoever keeps milch cows, will find roots an important auxiliary for milk in the winter season, and, of course, will find their tops a like important aid to "soiling" in the latter months of autumn. But I think it best to enumerate only the fewest, the simplest, and the best known to all farmers, of the articles, which, from experience, I have found the surest, and the best to be relied upon for a successful conduct of the system. These are those already enumerated; oats, barley and Indian corn, sown broadcast or in drills, for fodder.

3. The time in which the above articles are to be sown. The usual period in this country for turning out cows to

pasture, is from the 20th of May to the 1st of June. Antecedent to this period no succulent food can be obtained for "soiling." Preparation, however, may be made the autumn previous by sowing winter rye, according to the proportion required for "soiling," from the 10th or 15th of the month of May to the 1st of June. This could be done with advantage, but I have never practised it more than once; because, although I have always had rye fit for cutting at this time, yet it is too valuable, as grain and straw, for me so to use it; regarding as I do winter rye, at the usual prices of grain and straw in this vicinity, to be the most profitable of any grain product.

The reliance in the "soiling" system, for succulent food between the 20th of May and the 1st of July is grass, cut and delivered in the stable; and according to my experience, one and a half square rods per day for each cow "soiled" is ample for this purpose. The grass thus cut was usually that which is the least likely to be preferable for winter keep, such as that growing by the side of my farm roads, or under trees, or that having the rankest fibre.

The food sown and cultivated for soiling, in this climate, must have exclusive reference to the summer and autumn months, commencing with the first of July. And the following is the order of sowing, according to my practice, justified by experience, the proportion of land sowed at each successive period, being as above stated, *one and a half, or two square rods per day, for each cow soiled.* To produce a sufficient quantity of succession of succulent food, sow—

1. As early in April as the state of the land will permit, which is usually between the 5th and the 10th on properly prepared land—oats, at the rate of four bushels to the acre.

2. About the 20th of the same month, sow either oats or barley, at the same rate per acre, in like quantity and proportions.

3. Early in May, sow in like manner either of the above grains.

4. Between the 10th and 15th of May, sow Indian corn (the flat, southern, being the best) in drills, three bushels to the acre, in like quantity and proportions.

5. About the 25th of May, sow corn in like quantity and proportions.

6. About the 5th of June, repeat the sowing of corn.

7. After the last mentioned sowing, barley should be sown in the above-mentioned quantity and proportions, in succession, on the 15th and 25th of June, and on the 1st of, or early in July. Barley being the best qualified to resist the early frosts.

The results of the above sowing in succulent food, may be expected to be as follows, seasons of extraordinary drought excepted.

The oats sowed early in April, will be ready to be cut for "soiling" between the 1st and 5th of July, and will usually remain succulent until the 12th or 15th of this month.

Those sowed about the 20th of April, will be ready to cut between the 15th and 20th of July, and will last nearly or quite till the 1st of August.

Those sowed early in May, will be ready to succeed the preceding, and last till about the 10th of this month.

The corn sown on the 10th and 25th of May, and early in June, will supply in succession, succulent food of the best quality, until early in September.

The barley sown in July, will continue a sufficient supply until early in November; at which time, and often before, the tops of roots, carrots, beets or turnips, are a never failing resource.

In the above enumeration of articles to effect a succession of succulent food for "soiling," I have carefully confined myself to those which were the fewest and the most commonly known. I have also stated their succession in point of sowing and use, as if no other articles could be brought in aid, for the purpose that there may be no disappointment. Whereas, in the latter end of July, and in August, second-crop grass may be generally relied upon, and in September and October, the tops of roots, as above-mentioned, and of Indian corn, are also a reliable resource.

I have also stated a succession of sowings, which my experience has shown to be full and sufficient, and which, if the quantity sowed should be equal to *two square rods* for each

cow "soiled," per day, will certainly be more than sufficient for summer "soiling;" but as before stated, if there should be excess, nothing is lost, as it becomes a resource for winter food for cattle.

I cannot close this communication, without remarking upon the importance of this system, and of its being known and understood. Nothing seems less realized than the productive power of the soil, when it is good, arable, and well cultivated. A man hardly dares to call himself, in our country, a farmer, unless he have thirty, forty, or fifty acres. If he have only ten, fifteen, or twenty, he aspires only to the character of a gardener; but as to keeping any number of cattle beyond what is wanted for his own family use, he generally regards it wholly out of the question. Now there is in our country no class of men whom it is more desirable to encourage and instruct in the actual productive power of the quantity of land they possess, than these *ten, fifteen, or twenty acre* men. As this class multiplies, as it must, it will become a most important element in preserving and perpetuating conservative principles in our institutions. The consciousness of an identity of interest between the small and the great landholder, is in a republic, one of the strongest bonds of its continuance and happiness. A practical knowledge of the productive power of the soil, and of the mode of making its yield the most, will not only create in them content, but will prevent them from running into debt for more land, a practice, of all others, the most embarrassing and ruinous to that class of farmers. That this class may obtain distinct and practical knowledge of the mode of operating on a small scale, on this system, I state that I have known *two* head of milch cows kept in full milk and high condition through the whole summer season on *one* acre of land, and some food from it left for winter use. To obtain the requisite succession of green food, *one-quarter* of an acre was sown of articles herein already stated, early in April, another *quarter* about fifteen days after the first, and so the remaining *two quarters* in similar succession.

The first sown will be in a state to be used in "soiling" about the 1st of July, until which time, grass cut and brought to the stable is the reliance. From the 1st to the 15th of July, the food obtained from the first quarter of an acre, will be

usually a full supply. As soon as this quarter of an acre is fed off, it is to be well manured,—of which the cattle will have afforded an abundance,—ploughed, or spaded, and the articles above stated, sowed and rolled in. The same process is to be pursued in respect of every succeeding quarter of an acre, as soon as it is fed off, as long as the season will permit an expectation of a crop from such sowing.

Of course, a farmer upon such a small scale, will have roots of some kinds, carrots, beets, turnips or cabbages, for winter supply, which will come in aid of the food of the one acre, to such a degree that the articles sown upon it will become also in part a reserve for winter supply. I have stated that *two* cows may thus be kept on one acre during the summer season, because I know the trial has been made with complete success by another individual; but from my own experience I do not hesitate to state that *three* cows may thus be kept in full milk and in high condition on a single acre. Whoever commences the system, should begin on a small scale. Experience will show the way to success. The great profit of the system is the abundance of manure which it insures, of the best quality, at the cheapest rate. The importance of manure to successful husbandry, it is not for me to explain. Whoever has no funds to purchase it, will find no mode so sure, so cheap, and so easy to obtain it, as the system of "soiling."

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THE PRINCIPLES OF PLOUGHING.

BY SANFORD HOWARD, ESQ.

Every operation of agriculture may be said to involve certain principles, a knowledge of which is essential, more or less, to the success of the farmer. It is proposed to consider, on this occasion, some of the principles which relate to the tillage of the soil by that important implement, the Plough. The remarks to be made will have special reference to the effect of different operations on the soil, though the proper form and construction of ploughs for different purposes, may be incidentally noticed.

The chief object of ploughing may be deemed to be the formation of a seed-bed; but the particular manner of attaining this object must depend on the nature of the soil, and the crop to be cultivated. Hence, to facilitate an understanding of the different branches of the subject, it will be expedient to consider it under separate heads.

1. *Stiff, or Clay Soils.* A general principle applicable to cultivation, is contained in the maxim, "Make heavy land lighter, and light land heavier." This may, in fact, be called one of the cardinal rules of farming, because either of the extremes of heaviness, or lightness of soil, is unfavorable to the production of crops. The principal aim then, in the tillage of stiff or heavy soil, should be to make it lighter and more friable.

But the question is naturally suggested in the outset:—Why should heavy soil be made lighter? For several reasons. In the first place, the mechanical relations of such soil are naturally ufavorable to the growth of most crops; the heaviness and compactness prevent the proper extension of the roots of plants, compress them within narrow limits, and of course restrict them to a small supply of food. In the next place, there is a tendency in clay soils to render inert the vegetable nutrition which they contain. It is a common expression, that such soils "hold" manures. They do hold them,—hold them in some instances too closely,—that is, the manures are locked up by some principle which prevents their being fed on by plants. It has been proved by experiments, that clay, or earth in which it is a prominent ingredient, has a strong affinity for certain properties of manures, as ammonia, potash, soda, &c. The experiments alluded to, consisted in mixing liquid manures, as urine, with various parcels of sand, ordinary loam, and clay. The coloring matter and the odor were abstracted from the manures in proportion to the amount of clay contained in the earth. Similar experiments have been tried with night-soil, and with other substances, which in several instances emitted pungent ammoniacal odors. After a thorough mixture with aluminous or clayey soil, no smell could be detected. The sandy soil, or that destitute of clay, on the other hand, permitted the free escape of the gases, as proved

by the presence of disagreeable odors, and by the liquids retaining their coloring matter. The interesting details in regard to these experiments will be found in the various communications of Messrs. Thompson, Way, Lawes, and Gilbert, in the Journal of the Royal Agricultural Society.

These results agree precisely with common observation, and the existence of a strong affinity in clayey soils for the elements of manures, cannot be doubted, although the precise nature of this affinity may not be fully known.

There is another well known property in clays, which, when properly considered, serves to explain their tendency to inertness, and teach the great fact on which we started, that they should be made lighter, and more exposed to atmospheric action. The *binding* nature of such soils can hardly have escaped the observation of every farmer. We see, for example, that if clay, while in a moist state, is cut from its bed in pieces, there is a tendency in the particles which form these pieces to cohere; the particles attract each other, and as the moisture evaporates they combine firmly together. The firmness with which they thus unite, and the degree to which the air is excluded, depends much on the size of the lumps or pieces. If they are a foot square, they bind together and remain more or less in these dimensions, and the air acts on but a comparatively small part; but if they are only an inch square, the strength of cohesion is proportionately less, and the exposure to the air proportionately more; consequently the finer division is more favorable to friability.

But the question may be asked—What has this to do with the point—why is this exposure to the air necessary? It has been already shown that the elements of vegetable nutrition in clayey soils are latent, not sufficiently soluble. Now the great dissolving or decomposing agent of nature is *oxygen*, one of the elements of the atmosphere. One object, therefore, in exposing clayey soils to the air, is, that the oxygen may bring the food of plants into a soluble state, available to plants.

But besides the development of soluble food, another important effect is produced by the *aeration* of clayey soils. It is a common expression that clays are "cold," and that they require to be "warmed up," to bear crops. It is so in fact, and hence

one of the changes which it is desired to produce in such soils, is a higher temperature. Every farmer knows that his crops require a certain degree of warmth. Now it is a known fact that the absorption of oxygen produces heat. Thus the decay of vegetable and animal bodies has been properly called a slow combustion. The heat is, of course, sensible in proportion to the rapidity of the combustion, but the amount evolved in the process is the same, whether the combustion is slow or quick. It has been already remarked, that clayey soils contain more or less carbonaceous or organic matter, and the union with oxygen which is effected by exposure to the air, actually imparts warmth to the soil, and this of itself, in many instances, may do much towards the perfection and yield of crops.

Upon these principles rest the advantages of thorough fallowing, for stiff soils. The frequent workings produce that aeration, or absorption of oxygen which is so important in effecting the necessary decompositions, and bringing the soil to a state which enables plants to derive from it full support. But on soils destitute of clay, as flinty or sandy soils, these beneficial results do not ensue from the same operation, because they are deficient in the elements—alkalies and organic matter—which are not created by the process, but only made soluble, in the former case. It is true that the necessity for naked or open fallows on clays, has been, in some respects, done away, by the cultivation of crops which tend to keep the soil open—as the various root crops, peas and clover—but the effect in both cases is similar, viz.: the improved friability of the soil.

The particular condition, then, of the seed-bed which we wish to produce on stiff or clayey soils, is one of comparative lightness and friability. Hence that mode of ploughing such soils which effects the most thorough breaking and exposure to the air, other circumstances being equal, would be most advantageous. It is proper to remark, however, that the particular kind of plough, as to shape and action, depends on whether or not the land has a coating of vegetation to be turned under. If it has no vegetation on its surface, the most complete crumbling and mixture of its particles would best coincide with the main principles hereinbefore laid down, and to effect this a plough which in its breast and mould-board

should present a considerable angle to the furrow slice, causing it to rise somewhat suddenly, would be most suitable. But when the land to be ploughed is in sward, or is covered with weeds, an important object is to destroy this vegetation. This is desired, both that it may not interfere with the crop to be put on the land, and also that the crop may be benefited by the decomposition of the former growth. Having in view, therefore, the burying of the vegetation, it will be necessary to modify the form of the plough from that adapted to the former case, to accomplish this object in the best manner. If we were to adopt the same abruptness of breast and mould-board as was recommended where there was no vegetation on the surface, the furrow-slice would be liable to be so much broken that the sod would not be properly subverted, and the decomposition of the vegetation would not be effectual; the plants which it was wished to destroy might be left in a growing state, instead of being put out of the way and made to feed the desired crop. But the grand aim in the performance of the work would still be to effect the most thorough breaking of the soil, which is compatible with the proper disposal and decomposition of the sod or surface vegetation.

Attention to the two requisites just mentioned,—the pulverization of the soil, and the decomposition of the surface vegetation, is of very great importance on stiff soils, and there is a very wide difference in the operation of different ploughs, as regards those requisites. The following is a case illustrating this :—

A farmer (Mr. Kirtland) near Albany, N. Y., in 1849, ploughed a piece of rather stiff loam lying in grass. The soil was of such uniform quality that no particular difference could be discovered in the whole piece. It was ploughed seven inches deep. Several kinds of ploughs,—perhaps eight or nine different patterns,—were used in the work. Stakes were put up, or other means used, to mark the work of the different ploughs. All the land was treated alike. A great difference in the friableness of the soil was seen as soon as the ploughing was done,—some of the ploughs having left the furrow-slice loose and open; others having turned the soil without scarcely changing its texture, and others, again, even compressing the soil still closer together in the operation. A great difference,

also, was early discovered in the growth of grass between the furrows. Where one of the ploughs was used, scarcely a spire of grass started, and the whole sod soon rotted; but where the others were used, the grass sprung up and grew with such luxuriance, that by the time the corn was large enough to weed, the interstices of the furrows presented the appearance, in most instances, of young grain growing in drills. These differences in the condition of the soil and the growth of grass, of course, caused a corresponding difference in the labor of cultivation, and in the growth and yield of the crop. The superior growth of the corn, from the first start to the harvest, marked the operation of one plough, to a furrow; the ease of cultivation corresponded to the growth of the crop, and even when the land was ploughed the next year, the same difference was plain in reference to the decomposition of the sod, and the crop of oats which succeeded, showed a greater yield on the same lot.*

In ploughing stiff soil, the object of dividing it and exposing it to the air, can be best accomplished by a narrow furrow-slice. Such a slice, from its less weight, falls over and lies more lightly, and at the same time cuts the soil into smaller divisions and exposes more surface. Some have supposed that it was quite as well to turn large or wide furrows, and attempt to produce the requisite tilth afterwards with the harrow or some similar implement. But the object is nearly impracticable. If we attempt to work the furrows with a tool which will penetrate through them,—as the cultivator or grubber,—the vegetation will be brought more or less to the surface; if the harrow is used, it only lightens an inch or two of the surface, while at the same time it packs more closely the under portion. Road-makers know that the harrow is one of the best implements they can use for solidifying the earth.

The pulverization of the soil and the destruction of the vegetation, does not, as some persons suppose, depend greatly on either the flatness or angularity of the furrow-slices. Some ploughs turn the slice flat, and yet much grass starts in the interstices; others, as the most approved Scotch ploughs, give the corner of the furrow-slice what is called a "high set," but

* It may be proper to say, as an inquiry will naturally arise, that the lot alluded to was ploughed with Prouty & Mears's 5½ plough.

the soil is left in so friable a state that the slightest brush of a harrow, or even a shower of rain, carries the earth into the interstices of the furrows and stops the growth of grass.

As to the *depth* of furrows, no specific rule can be laid down, and practice on this point must be governed by the nature of the soil and subsoil, modified, in some instances, by the crop to be cultivated, and the kind and quantity of manure to be applied. As a general fact, it may be said that stiff soils require to be ploughed more deeply than light soils. The former often contain the elements which nourish crops to a great depth, and from their nature (as before described) require deeper and more thorough loosening. It is doubtful whether practice has yet established any particular depth as most proper, even for stiff soils; but perhaps there has been a nearer approach to seven inches as a standard, than to any other depth. There are peculiar situations where a greater depth is desirable,—as for alluvial or sedimentary soils. There are many other cases where a *loosening* of the earth is advisable to a greater depth than seven inches; but, except in the cases just specified, the question is,—would it be better to effect this loosening by ploughing in the ordinary way, or with the subsoil plough? This point will be more particularly considered under the heads of trench ploughing and subsoil ploughing.

2. *Light, or Sandy Soil.* The properties and action of this kind of soil, may be said to be opposite, in some important respects, to those of stiff soil. Sands and gravels, being destitute of clay, do not "hold" manures; their porosity causes them to be strongly acted on by the air, and their organic matter is quickly decomposed and dissipated. Soils abounding in clay are too little acted on by the air; those which contain no clay are acted upon too much. These facts at once teach that different modes of tillage are required in these cases. In sandy soils we must guard against this too strong atmospheric action, because it dissolves out manures too rapidly, and carries them off by evaporation and filtration before they can be absorbed by plants. Hence, fallowing, or repeated ploughing, so useful in developing the vegetable nutriment which lies latent in clay, would be decidedly injurious in sandy and gravelly soils. The remarks of Dr. Lyon Playfair, of London, who is

well known as a writer on the applications of chemistry to agriculture, are worthy special attention in this connection. He says,—"Fallow is only a legitimate operation of farming, when the soil, as generally is the case in clay, contains a practically inexhaustible amount of alkaline silicates. In poor soils, the process must be one of rapid impoverishment; and unless the ingredients thus removed from the soil be fully restored by manure, the operation of fallow can only be characterized as an exhaustion of the capital of the land, and not as the use of interest."

Having in view, therefore, the principles alluded to, we should strive to give to sandy soil more firmness and solidity, rather than more looseness. Instead of aiming to produce the greatest amount of pulverization, we should try to disturb the particles of the soil as little as practicable, or even to make them more compact in ploughing. The complete inversion of the furrow-slice, so that it shall lie flat, the edges closely fitting in, is here important, because it offers less exposure to the air.

A shallow furrow, too, is preferable to a deep one, except for root crops, and particular cases where a large quantity of manure is to be applied. Shallow ploughing for this kind of soil best accords, also, with the principles before laid down as a general guide, and practical experience corresponds to the principles. There is very little *natural* fertility in soils of this description; all their richness is near the surface, and has been formed either by the slow accumulation and decay of indigenous vegetation, or by the artificial application of manure. It is obvious that the advantages in favor of deep ploughing, as before described, do not apply here. On the contrary, the deep furrow is not only objectionable by disturbing the tolerable compactness which, especially for the wheat crop, it is desirable to preserve, but it would bury all the good soil too low for the crop to derive the full benefit of its elements, and would bring to the surface in its stead, the inert, sterile earth, which is incapable of nourishing plants until made fertile by manure.

One of the most sensible English agricultural writers, M. M. Milburn, has made the following just observations on this subject. After showing that deep ploughing is highly beneficial on deep soils, he says,—"But on poorer and thinner soils this process would be unavailing. The subsoil below is poorer

than the soil above; to deepen here would be only to add to the previous poverty, and hence the cultivator must hit upon some other mode of restoring fertility than mere deep cultivation. Nay, we have seen the mere deep ploughing of ordinary land operate against immediate productiveness, and have, for a time, exactly the opposite tendency."

In the most successful improvement of sandy or thin soils in this country, the depth of ploughing for ordinary field crops has seldom exceeded five inches, perhaps never exceeded six inches. On similar soils in England, the depth has generally been less. Mr Colman, in his *European Agriculture*, states the average depth of English ploughing, as five inches; but adds, —"Three of the most eminent practical farmers with whom I am acquainted here, plough not more than three inches; but the surface mould in these cases is very thin, and the under stratum is a cold, clammy chalk." He refers to one very successful farmer, who cultivates "a light, poor, thin, moory soil, with a subsoil of either blue or white clay, peat, or gravel," who, instead of breaking up his sward with the common plough, cuts it up with the breast or paring plough, and in a six years' rotation, it is ploughed "four times by men and three times with a single horse plough," the latter not going to the depth of more than three inches. He says, another farmer in the same neighborhood states that the use of the common plough would not leave the ground sufficiently firm for wheat. He refers also to Mr. Pusey, who occupies similar land, and who says,—"I never plough it deeply, but I repent of so doing," and adds, that he is getting more and more into the practice of using the breast plough instead of the horse plough; and, in conclusion, he (Mr. Pusey) says,—"Without recommending shallow cultivation in districts where deep ploughing has been hitherto practised, I would merely warn beginners against plunging recklessly into the subsoil."

Mr. Colman refers, also, to the practice which prevails in England, of compressing light soils for the growth of wheat, by the use of the roller and by the tread of animals, (sometimes by human feet,) but especially by sheep. In the cultivation of wheat and other grains in this country, a similar course has been found advantageous. The sandy soils in Ontario County, N. Y., and those near Albany, may be referred to

as examples. By proper compression of the soil and judicious manuring, it has been found practicable to raise good wheat on soils of so light a character that they were formerly thought not adapted to this crop.

It has been before remarked, in regard to giving the requisite solidity to too light soils, that the harrow is used by road makers for consolidating the earth. Any one can be satisfied, by an experiment, that it produces this effect. A friend of the writer, who has paid much attention to this matter, explains the consolidating effect on the principle of atmospheric pressure,—the passage of the harrow-teeth through the soil causing a partial vacuum, which occasions a forcible rush of the air.

But some one may still be inclined to ask,—Why should it be necessary to take so much pains to compress sandy soils, for the production of wheat, when equally as great pains are recommended for making stiff soils lighter? The general reasoning before given, may be deemed a sufficient answer; but, it may be further said, in explanation of the opposite practices, that a particular state of the soil, as to lightness or solidity, is required, and that the pressure given in the one case, or the lightness attained in the other, only brings the different kinds of soil to the proper degree of consistence.

We have now considered the two main divisions of our subject,—the ploughing of stiff and of light soils. To illustrate the principles involved, it was necessary to present the opposite points in a distinct form. In regard to the intermediate descriptions of soils, it is obvious that the mode of tillage should correspond to their character, in proportion as they approximate to either of the two extremes of lightness or heaviness.

3. *Trench Ploughing.* This is neither more nor less than *deep* ploughing. The operation merely buries the surface soil and brings up the subsoil in its place. The principles which have been adverted to, in considering the preceding parts of our subject, point pretty clearly to the circumstances under which trench ploughing should be practised. They show that it is where the soil is rich to a greater depth than is reached by the ordinary mode of ploughing,—or, to speak more definitely, where the substratum is richer than the surface,—that this mode would be attended with advantage. Such soils are

not common, but are found in the form of alluvial deposits, and sometimes in districts of "secondary" formation. When the surface, in such cases, becomes exhausted by cropping, the bringing up of the subsoil renews the fertility.

The character of the subsoil can readily be ascertained by digging up a portion of it, and after exposing it to the frost and air for a season, planting in it various crops. Chemical analysis would show its particular qualities, and in connection with a comparison with other soils whose character had been ascertained by trial of crops, would afford a useful guide.

The "Michigan Sod and Subsoil" plough is well adapted to trench or deep ploughing. It has two ploughs (or the bodies of two) set in one beam and working in the same line. The forward plough cuts and turns over two or three inches of the surface, and the hinder one follows in the same furrow, bringing up the lower earth and turning it completely over that turned by the forward implement. It can be made to work to the depth of a foot or more. It is obvious that in this operation it effects twice as much division of the soil as the ordinary plough, and where the soil is of a heavy and tenacious character, this is of great importance. From this peculiarity, a plough of this kind may likewise be used to great advantage, and is probably superior to any other, for all soils which are required to be ploughed to a greater depth than seven inches.

4. *Subsoil Ploughing.* This differs from trench ploughing by simply loosening and breaking the substratum, without reversing the former relations of the soil and subsoil. As yet, it has hardly been tried in this country sufficiently to enable us to specify its particular advantages from actual results. Its effects in England have been very beneficial in connection with drainage, on stiff soils, and so far as ascertained, its effects are the same here. The breaking up of the subsoil favors the descent of the water to the drains. When the water remains long in the soil, in undue quantity, it runs the particles together and packs them in solid mass. Hence it has been found necessary to carry away the water before it can accumulate in sufficient quantities to produce this result. By means of drains, and a thorough opening of the soil and subsoil, this is accomplished.

There are other advantages of subsoil ploughing. In ferruginous soils, a hard pan, occasioned by a deposit of iron, is often found so near the surface as to be injurious to crops. If the soil is sufficiently drained and the hard pan is properly broken up by the subsoil plough, the rain water, in connection with the air, will dissolve out the substances which were injurious to vegetation, and give to the roots of plants a wider range for food.

The advantages of subsoil ploughing on tenacious soils, without underdraining, is at least but temporary. Where there is considerable descent to the furface it has been found, in some instances, to have, for a while, the effect of draining the soil to some extent; but where there is not much declivity, the water, from being confined, soon packs the earth, even more closely than it was before, so that the ultimate result is rather injurious than otherwise.

And here it is proper to remark, that the effects of subsoiling, on tenacious soils, even those which have been drained, depend much on the state of the ground, as to moisture, at the time the work is done. Thus, if the subsoil is charged with water, the subsoil plough produces no pulverization, but rather packs the earth more closely, by the pressure it causes in passing through; but if the subsoil is dry, or comparatively so, the implement thoroughly breaks it in pieces, and it remains in this open condition, allowing the water to pass freely through to the drains below.

Subsoil ploughing has, in some instances, had a favorable effect in enabling crops to withstand drought, as ascertained by using the implement in alternate breadths through fields. But further and more particular experiments are required to prove its effects with certainty, on different descriptions of soil, and for different crops.

BASKET WILLOW.

BY JOHN FLEMING, JR., ESQ.

This subject has, of late, occupied the minds of a great part of the farming population of this country. A number of articles have, at different times, been written on the subject, and, without doubt, the publishing of them has been of service, by awakening an interest in the minds of our agricultural and horticultural friends respecting the practicability of cultivating with profit, the plant called basket willow. These articles argued, however, in many respects, a want of information and a lack of experience on the part of their writers, with regard to the subject. I do not intend by this remark to find fault with the motives of those who have written them, nor would I give the impression that these persons have no knowledge or experience respecting the culture of willow. And yet, I am frank to say, that the brevity of their articles, the exaggerated statements they make of the profits realized, and the wrong impression conveyed to the mind of the farmer, respecting the kind of land on which willow can be cultivated, are likely to produce serious results, by which many speculators may suffer loss, and the farmer generally be led to lose all interest in the cultivation of a plant that can be grown to perfection, and with profit, by any one who has the right information respecting the following particulars, namely:—the climate and soil in which willow will grow to perfection; the right kind of plants, and the proper manner and time in which they should be planted; the culture they afterwards need in different kinds of soil; the best manner of harvesting them, and how to prepare them for the market. All this must be understood in order to the profitable cultivation of the basket willow.

To notice all these particulars in the narrow compass of an essay, is impossible. For, to attempt to give them even a passing notice, would expose the present writer to the same kind of criticism as that he has in kindness bestowed on the writings of others. I will therefore refer the reader for full information on each of those particulars, to a Treatise on the

Culture and Harvesting of Basket Willow, which is now about to be published by the author of this essay. And in this essay, I shall attempt only to say what is necessary about the practicability of cultivating basket willow in this country, and the encouragement they have who will undertake to cultivate and harvest it according to the rules laid down in the Treatise referred to.

From what has been said by lecturers and writers on the subject, many persons have been led to believe that all low, wet lands, are suitable for the cultivation of willow. This is a mistake. By such wrong views, many have been led to plant willow on land that was not suited for the purpose, and have lost all the labor and money expended in the experiment. Others have failed to make the cultivation of the plant profitable, by following the views of those who imagine that willow of any kind can be worked up into ware. Of this last class, many have asked me to buy their willow, who were greatly disappointed to hear that I could make no profitable use of it. Of the other class, I know of one instance where all the time and money were lost which had been expended in planting *twenty acres.*

The natural soil for willow is not sand, gravel, clay, nor peat. Willow will grow in any of these soils for a time, but not to perfection, nor to profit. If willow be planted in clay, the plantation will not be healthy, nor will it ever be of that quality which is necessary for basket making. In some instances the plant will look promising for a few years, but before the cultivator has half realized a full reward for his labors, it will become diseased, and stunted, and covered with yellow rings. If it be planted in blue clay, nothing can preserve it alive five years; for generally, in half that time, the plant will be burned at the root by the action of the clay. The same effect is produced on the willow by the black mud that collects in stagnant water.

Willow will grow well and fair by the side of running streams, on meadow land, and on the flats by the side of rivers, if there be sufficient suitable soil into which its roots can strike and by which the plant can be sustained in dry weather. But when clay is too near the surface, the willow will become diseased, and when the land is dry, it will die.

Some experienced willow growers like to have their plantations on low, damp, (*not wet*) flat lands. But, perhaps, good springy, side hill land is to be preferred; because such land is more healthy, both for the plant and for him that cultivates it. When such side hill land can be had facing the south, it will be found to produce more willow, and in greater perfection, than can be grown on flat land of any kind.

Many suppose that the more wet the land is, the greater and fairer will be the crop, and the greater, also, the profits it will afford. This, too, is a mistake; for it is not the largest and rankest willow that will yield the greatest profit, but that which is of moderate size, smoothest grown and most tough. Such willow will command the greatest price in the market. It is wrong to suppose that the extra bulk or quantity will more than make up the deficiency in price, for there is, generally, a very full supply of such material in the market. Hence it is, that the experienced cultivator exercises all his ingenuity and skill to have his willow grow of the average size, rather than of a mixture of very small and very large. To secure so desirable an end, nothing will be found of more service than a proper selection of soil; and good springy, side hill land, is unquestionably the best. What is not accomplished in the selection of the soil, must be effected by a proper selection of the kind of plant, and by regulating the growth of the young wood, by cutting or harvesting the yearly produce at different and suitable seasons of the year.

The best willow, and the most profitable plantations of it, are found where the land is well chosen, and properly prepared by ploughing and the previous cultivation, for one or two years, of a crop of potatoes.

Some persons may think it a strange thing to plough and plant land as a preparation for the culture of willow. But the day is coming when the people of these United States will see hundreds and thousands of acres of this plant grown on such land, and will wonder no more than we now do at those who prepare by ploughing, their land for corn and potatoes.

Men once thought that the grass field was a good place for the apple tree. True, they saw that it flourished better in the garden; but men who were observing and wise enough to set out good apple orchards, and keep them well ploughed, were

few in number, and they made the profit. So with the willow. Those who cultivate it in the grassy meadow will reap some harvest, but a very small one in comparison with that which he will secure who cultivates good and more suitable land, and prepares it for the plant with the plough, the harrow and the hoe.

Before willow is planted on low wet land, trenches should be cut in such a manner as to allow of draining off the water in wet weather, and of retaining it when necessary to moisten the land. No other preparation is necessary on land that cannot be ploughed. But where the land can be ploughed, it should be done; and where it cannot be ploughed, the draining should be completed before the willow is planted.

There is a great quantity of land in every State in this Union, on which willow can be raised to perfection, and with a certainty of large profit to the cultivator. Any one who has suitable land on which to grow willow, and who lives near to our large cities, or to railroads leading thither, and by which they can send their crops to market, may, by cultivating it in a proper manner, realize a handsome profit.

The prices of willow range from $5 to $7 per hundred weight, for English, French, Dutch, and German; and native grown willow, raised from sets imported from England, sell at $2 more per hundred weight. A willow plantation, if properly cared for, will continue in good condition for fifteen years. The crop taken from such a plantation, will average 2,000 lbs. a year, of what will be fit for the market. The first year, there will be no crop; and the second year, it will be fit for little else than planting. But for this purpose, enough sets may be cut to sell for about $100. After the two first years, the crops will allow of being averaged at 2,000 lbs. per year, including those of the two first years. The lowest price that can be allowed for the willow, is, $60 for 1,000 pounds. The sum total, therefore, of the value of the crops for fifteen years, including the first and second years' growth for planting, will be about $1,900. The interest of the money paid for one acre of land, for fifteen years, may be put down at $90. The cost of the sets, and planting them, and the interest thereon for fifteen years, may be put down at $150. For replacing dead sets, and weeding the plantation, we may allow $35. For

cutting the willow and preparing it for market, we may allow $400. In all, $675. We may express these sums in figures, thus :—

Total value of crops for fifteen years, . . .	$1,900 00
Total expenditure for fifteen years, ...	675 00
Total profit, ...	$1,200 00

To this statement, I do not fear any contradiction. And I am convinced that I shall thereby mislead no one, or cause him to engage in an unprofitable speculation. In preparing this statement, I have been governed by my own experience and observation, and not by the sayings of other men.

For willow of good quality there is always a ready market; and there is good reason to believe that such a market will continue for many years. In this country, as it was once the case in England, ash and oak baskets are much in use. But the time is fast approaching when *willow baskets* will drive them out of the market. In England, formerly, all light goods were packed, for transportation, in light boxes and in mats, and so were vegetables. Now baskets are in universal use, except for goods that will be injured by getting wet. Willow packing-baskets are in general use for almost every purpose of transportation, by farmers, gardners, wholesale dealers of all kinds, and by all classes in the community, for every possible purpose.

In Europe willow baskets are so much in use, that the American traveller notices the fact almost as soon as he arrives there. To this fact, many will bear witness. In the United States, basket making with willow is yet in its infancy. In the year 1825, it had been barely introduced. At that time, I believe, there was scarcely a willow worker in the city of Boston. In the year 1852, there is sent to stores in Boston at the rate of six thousand dollars' worth of willow goods manufactured by the writer's own family.

In the year 1845, the writer of these remarks commenced, and is now connected with, the largest willow ware manufactory in the United States. We purchase and work up into ware more willow than any other person or company in these States, and have, therefore, had an excellent opportunity to

learn what is the best willow used in the country, and what is the prospect both for the cultivator and consumer of the article.

For more than twenty years I have been engaged in cultivating willow, in preparing it for use, and in manufacturing it into ware. Of this time, about eight years have been devoted to improvements in the culture and manufacture of it in America. Previously, I lived in my native country, England. The results of my experiments there and here, and the knowledge I have of the experience of my father and my grandfather, in the same business, for at least fifty years, I consider sufficient to justify me in saying that I fear no contradiction to the statements I have now made, nor any taunting remarks from the importers of foreign willow.

The importer of foreign willow has said, repeatedly, that the plant *cannot be grown here to perfection.* But I can show him the living willow, that is preferred by the best manufacturers and the best workmen in this country, and which brings the highest price paid in the market.

The intelligent cultivator of the soil will know how to account for the spirit of opposition to the culture of willow in this country, that is shown by importers of foreign willow. We must expect that business men will do all they can to secure their own interests; and, in doing this, they cannot always seek the well-being of others,—that is, in a pecuniary point of view. But, since human society is so constituted and human affairs are so regulated as to render it necessary that every one should be thoughtful, diligent and prudently enterprising, in order to provide for their own wants and necessities, the farmer must be alive to *his* advantages and his interests, if he wishes to enjoy the happiness of a home where there is peace and plenty.

In the United States, the people have many advantages and many privileges which the European looks for, but, as yet, cannot obtain. All those advantages and privileges are enjoyed, chiefly, as the result of the enterprising spirit and the sound judgment of the fathers of those who now occupy our farms. Then let the sons imitate those fathers in spirit and in the exercise of sound judgment, and let some willow plantations be seen on our farms. If they be properly cultivated, and cared for, they will be an ornament to the farm; they will prove use-

ful in giving a change in the somewhat tedious employment of the late winter and early spring months, and will be a source of no small profit. They will give employment to the farmer himself, as just stated, and also to his children, in spring; and, beside which, capital invested in the business, will yield a better return than any other common branch of agriculture or horticulture of which I have any knowledge.

To excel in any profession or business, besides being correct in theory, a man must learn, more or less slowly, how to employ his time and talents to the best possible advantage. He will succeed in proportion as he is suited to the calling he engages in, and in proportion also to the circumstances under which he engages and continues to labor. The means of improvement he has within his reach must likewise be considered as exerting some influence to lead him on to the accomplishment of his purpose. Prudence and perseverance are, also, very necessary qualifications, and without them, no one can reasonably expect to succeed. As with professional men and men of business, so it is with those who shall attempt to excel in the cultivation of the willow. The best way for an inexperienced person to adopt, is to commence upon a small scale. Then, if by any inadvertency he should fail in his first attempt, the loss will not be great. If he be careful and successful, he will then have the more confidence in making another effort on a larger scale.

As one of those who have written on the culture of the willow, I will not hold myself responsible, or consider myself blame-worthy, if men fail to succeed in the cultivation of the plant, unless they will be governed in the matter, by the directions I have given on that subject in the Treatise I am about to publish on the Culture and Harvesting of Basket Willow. But if any person will follow my directions, and cultivate a portion of his land for the purpose of testing my views, or as a means of employment, or as a matter of business, I shall have no reluctance to meet him, and shall expect his favorable opinion respecting the matter when he shall have given it a fair trial.

Sherborn, Mass.

PLYMOUTH COUNTY AGRICULTURAL SOCIETY.

The annual cattle show and fair of this society were held at Bridgewater on the 7th of October. The day was delightful, and the concourse of people drawn together immense. The first thing that attracted attention in the morning was the ploughing match; this presented, as it usually does, a lively and exciting scene, which was witnessed by a large number of gratified spectators. The teams, of which there were sixteen in number, were single, consisting of one yoke of oxen each, which were managed by the ploughmen, who, being expert and skilful men, having well-disciplined cattle, contrived, under obvious disadvantages, to execute their respective tasks with expedition, and in a manner to meet the approbation of the committee. With reference to the general character of the exhibition, it may be remarked, that if not equal, in all respects, to what has heretofore been sometimes witnessed, it was nevertheless, very respectable in all its departments. Among the attractive objects presented were beautiful birds of the domestic species, and fine porkers, and promising young steeds, and comely kine, and noble beeves, and products of the dairy in great force, looking cleanly, rich and tempting; and there were, too, evidences of female taste and skill displayed in a great variety of fancy work, and in manufacturing, which were highly creditable to the fair contributors.

Of fruits the display surpassed, in richness, variety, and beauty, anything of the kind ever before offered since the establishment of the society.

The address was delivered by Hon. J. H. W. Page, of New Bedford, president of the Bristol County Agricultural Society.

Improvements.

Three entries were originally made for the prospective premiums offered by this society. "For the most extensive forest of any sort of trees suitable for fuel or timber, raised from the seed, not less than a thousand trees to the acre, which shall be in the most flourishing condition, and more than five years old in September, 1852," (two of the competitors having withdrawn,) we recommend the award of the first premium, of $30, to Daniel Alden, of Middleborough; he having planted six and a half acres, and succeeded in raising more than ten thousand forest trees of a healthy appearance and vigorous growth, on a soil so totally exhausted by excessive cultivation with grain crops, without manure, that it produced little else than white moss.

In the early settlement of the country, one of the greatest obstacles to the cultivation of the soil was the interminable forests, and it became necessary for our progenitors, in order to clear the land for tillage, to cause indiscriminate "*strip and waste*" of what we now consider one of the most valuable products of the soil; beyond the immediate supply of their wants for fuel and log cabins, the stately forest tree was considered an unwelcome "cumberer of the ground," and doomed to extermination so far as the wants of an increasing population should need the soil for cultivation.

In the selection of soils, the early pioneers generally overlooked the most fertile, for sandy plains of easy culture,—then rich in the decayed and decaying forest foliage; these were cultivated so long as they would yield remunerating crops without the application of fertilizing manure, and then abandoned, and the woodman's axe laid waste another tract, which in turn was cultivated, exhausted and abandoned.

This system of devastation and exhaustion has been continued in this county, with few and feeble attempts at reproduction or renovation, until our most valuable forests are nearly exterminated, and very many barren fields left desolate and worthless for cultivation.

The inroads thus made, together with the more recent but not less fatal enormous draft upon our forests, for propelling steam engines, by the increasing demand for lumber, and the

prodigal use of fuel, must soon be realized in the advanced prices of fuel and lumber as our railroads become more numerous and extensive, and our population more dense.

There are thousands of acres of barren fields in this county that have been rendered sterile by the parsimonious policy of miserly cultivators, that might in a few years be converted into vigorous forests, at a trifling expense, and how much better for the proprietors thus to appropriate them, than longer try to encourage the poor, jaded soil, in her abortive attempts to produce vegetables and grain, aye, than longer pursue this suicidal policy; better, by far, abandon them to chance, that the favoring gales of heaven may waft to their bosoms some fructifying seed, which, germinating, would in time produce a forest.

"What is your age?" was the interrogatory which an eastern prince caused to be put by one of his attendants, to a very old man seated by the wayside. "I'm four years old," was the reply. "Do you intend to insult his majesty?" was the rejoinder. "No, may it please your majesty, it is but four years since I began to live as I ought for posterity,—*since I planted a tree.*" According to this definition of living for posterity, but comparatively few of our countrymen have begun yet to live; for instead of planting, their study and occupation has been to destroy trees. But every consideration of interest and comfort admonish us to change our habits in this respect, and to provide in time for the wants of posterity.

The planting of forests and ornamental grounds has long been practised in Europe, particularly in Great Britain, where it is sedulously encouraged by statesmen as well as landholders. It has contributed much to beautify the country as well as to improve the productiveness and profit of the soil. Some idea of the extent to which it is carried may be formed from the fact that the Duke of Bedford, alone, has, in seven years, planted upon his estate no less than one thousand five hundred and forty acres of ground with five million seven hundred and thirty-five thousand trees, exclusive of six hundred and eighty bushels of acorns, and other seed put in with the dibble.

The business of planting forest trees, like the culture of any other new branch of rural economy, seems much more formidable and expensive in prospect, than it turns out to be in

practise. It may be managed upon every farm with trifling expense. Seed from forest and ornamental trees may be readily gathered at the proper season, and planted and raised with almost as much certainty of success as any of our ordinary crops.

Every soil is naturally adapted to the growth of particular species of trees. This indication of nature should be consulted, and trees growing naturally on similar soil in the neighborhood should be selected. In the selection of forest seed reference should always be had to the quickness of growth and the value of product.

Respectfully submitted,

HORACE COLLAMORE.

PRODUCE.

The soil of Plymouth County has generally been considered, by our fortunate neighbors in more fertile counties, as a barren waste, made up of "pond holes, gravel hills and sand banks;" and the reports of the productions of our soil have not unfrequently elicited bold and stringent criticisms, intimating, in no very courteous terms, that, by the duplicity of your committees, the crops have been exaggerated beyond all precedents in agricultural statistics. We claim no exemption from human fallibility, but we do claim for ourselves, our associates and predecessors, the virtues of honest intention and incorruptible integrity; and we claim for the farmers of Plymouth County a fair and honorable share of scientific skill in agricultual affairs, conjoined to indomitable energy and persevering industry.

Although our good or evil fortune has cast our lot and given us an inheritance on this reputed sterile soil of the "Old Colony," yet in this dispensation we see no cause to distrust the wisdom and goodness of Providence, while, in accordance with the divine injunction, we obtain by the "sweat of the brow" a fair share of the staff of life, with some of the luxuries and all the necessaries requisite to render life endurable.

An editor of an agricultural journal, some years ago, said, "It may be thought paradoxical to some that the county of Plymouth should be agricultural. Plymouth, say they,—that stepping-stone to sandy Cape Cod, that territory situated between two bays, and made up of pond holes, gravel hills and sand banks, where every town is filled up with nail machines, spinning jennies, anchor shops and shoe factories,—can such a place have any pretensions to agriculture?" The same writer adds—"Such may be the language of the prejudiced, but let them not 'darken counsel by words without knowledge.' The truth is, that Plymouth County is by no means behind hand in agriculture; it has much excellent land, and can boast of some of the best farms and best farmers in the Commonwealth."

We have met here to-day to present our claims for this enviable title, and the competitors for your bounties, and candidates for this honorable distinction, are neither "few nor far between." More than one hundred and twenty claims were this year presented for premiums on improvements and produce,—nearly twice the number that ever before entered their claims to become recipients of your bounties. Sixteen entries were made for the greatest crop of Indian corn on one acre. Notwithstanding a partial failure in some of the crops in consequence of the extreme drought, yet we believe that something more than a medium crop of Indian corn has been harvested in this county the present season.

Premiums.

Calvin Leavitt, of Bridgewater, is entitled to the first premium of $8; he raised, according to the measurement, $122\frac{10}{85}$ bushels on an acre.

George W. Wood, of Middleborough, is entitled to the second premium of $6; he raised $102\frac{10}{85}$ bushels.

Richard Sampson, of Middleborough, is entitled to the third premium of $5; he raised $96\frac{40}{85}$ bushels.

Martin Leonard, of Bridgewater, is entitled to the fourth premium of $4; he raised $94\frac{70}{85}$ bushels.

Philander Wood, of Bridgewater, is entitled to the fifth premium of $3; he raised $92\frac{80}{85}$ bushels.

A gratuity of $2 is recommended to be paid to Willard Wood, of Bridgewater; he raised 92$\frac{60}{85}$ bushels.

One vol. Mass. Ploughman, each, to Horace & Virgil Ames, of Bridgewater, and Daniel Alden, of Middleborough. One vol. each, Boston Cultivator, to Orsamus Litteljohn, of Middleborough, Aretas Fobes, of Bridgewater, and Nahum Snell, of West Bridgewater. One do. do. N. E. Farmer, to Benjamin Hobart, of Abington, and Josiah Whitman, East Bridgewater.

Four claims were made for the best field of Indian corn on not less than three acres.

Jonathan Copeland, of West Bridgewater, is entitled to the premium of $15; he raised 82$\frac{70}{85}$ bushels per acre, on a light, sandy soil, which he purchased a few years since for about fifteen dollars per acre.

Aretas Fobes, Bridgewater, one vol. Mass. Ploughman.

Six competitors entered for the best field of Indian corn on not less than two acres.

Spencer Leonard, Jr., of Bridgewater, is entitled to the premium of $10; he raised 98$\frac{30}{85}$ bushels per acre.

One vol. each, Boston Cultivator, to Nathan Whitman, East Bridgewater, and Daniel Alden, Middleborough; one vol. N. E. Farmer to William H. Adams, Bridgewater, and one vol. Mass. Ploughman to Paul Hathaway, Middleborough.

Four entries were made for the best experiment to prove the influence of subsoil ploughing on the corn crop.

Horace & Virgil Ames, of Bridgewater, are entitled to the premium of $5. Difference in favor of subsoiled part, 12$\frac{20}{85}$ bushels per acre.

One vol. Massachusetts Ploughman to Benjamin Hobart, Abington.

Seven entries were made for the best experiment in raising oats, not less than fifty bushels to the acre.

We have received no returns indicating the requisite number of bushels to entitle any person to the premium offered.

One vol. Mass. Ploughman to Aretas Fobes, Bridgewater, and one do. each N. E. Farmer to H. & V. Ames, Bridgewater, and Daniel Alden, Middleborough.

Three competitors entered for the best experiment in raising wheat.

No one has returned the requisite number of bushels to entitle them to the premium.

One vol. N. E. Farmer to H. & V. Ames, Bridgewater.

For the best experiment to prove the influence of subsoiling on the wheat crop, two entries were made.

Benjamin Hobart, of Abington, is entitled to the premium of $5. The difference in favor of the subsoiled part was $6\frac{3}{4}$ bushels per acre.

H. & V. Ames, Bridgewater, one vol. Boston Cultivator.

Spencer Leonard, Jr., Bridgewater, is entitled to the premium of $8, for the best experiment in raising barley. He raised $32\frac{1}{4}$ bushels on one acre and six rods.

Timothy French, Kingston, is entitled to the premium of $6, for the greatest quantity of white beans raised on half an acre. He raised $10\frac{3}{4}$ bushels on eighty-two rods of land.

There were ten entries for the best crop of ruta-baga, or French turnips, on quarter of an acre.

Lewis McLauthlin, of Pembroke, is entitled to the first premium of $5. He raised 180 bushels, equal to 720 bushels per acre.

One vol. each, Mass. Ploughman, to Orsamus Litteljohn, Middleborough, and George Drew, Halifax; one vol. N. E. Farmer to Paul Hathaway, Middleborough.

Entries were made for common turnips, but no one claims a premium.

Benjamin Hobart, Abington, is entitled to the premium of $5, for the greatest quantity of beets raised on quarter of an acre. He raised $257\frac{8}{56}$ bushels, equal to $1{,}028\frac{32}{56}$ bushels per acre.

One vol. Boston Cultivator to Paul Hathaway, Middleboro'.

Seth Sprague, Duxbury, is entitled to the first premium of $10, for the greatest quantity of carrots raised on quarter of an acre,—$187\frac{8}{56}$ bushels, equal to $748\frac{32}{56}$ bushels per acre.

Jonathan Copeland, West Bridgewater, is entitled to the second premium of $5. He raised a fraction less than 152 bushels, or equal to $607\frac{8}{56}$ bushels per acre.

One vol. N. E. Farmer to Benjamin Hobart, Abington.

Abiel Bassett, Bridgewater, is entitled to the premium of $5, for the greatest quantity of onions raised on quarter of an acre. He raised 170 bushels, equal to 680 bushels per acre.

Aretas Fobes, one vol. N. E. Farmer.

Austin J. Roberts, Middleborough, is entitled to the first premium of $5, for the greatest quantity of winter squashes on quarter of an acre. He raised 4,942 pounds on one-quarter of an acre, equal to 2 tons 942 pounds, or 9 tons 1,768 pounds per acre.

Nathan Whitman, East Bridgewater, second premium of $3. He raised 4,523 pounds.

We recommend that a gratuity of $2 be paid to Lewis Leonard, of Bridgewater, who raised 3,142 pounds.

Premiums on Improvements.

We have ten entries for the premiums offered for the greatest quantity of the most valuable compost manure.

Seth Sprague, Duxbury, is entitled to the first premium of $10. He made 600 loads of 40 cubic feet.

Josiah L. Bassett, of Bridgewater, is entitled to the second premium of $8. He made 443 loads.

Aretas Fobes, of Bridgewater, to the third premium of $6. He made 410 loads.

Daniel Alden, of Middleborough, the fourth premium, Colman's Reports. He made 369 loads.

One vol. Mass. Ploughman to Nahum Snell, West Bridgewater; one do. N. E. Farmer to Orsamus Litteljohn, Middleborough; one do. each, Boston Cultivator, to Austin J. Roberts, Middleborough, George W. Wood, Middleborough, and Benjamin Hobart, Abington.

Jonathan Copeland, West Bridgewater, is entitled to the first premium of $10, for carting on to his sandy fields and orchards the greatest quantity of swamp muck and peat mud. He carted 444 loads.

The advantages derived from the cultivation of corn for fodder,—especially when there are indications of the failure of the grass crop,—are not well understood and appreciated in this county. On good soils, from six to eight tons (when well cured) can be raised on an acre; and on less fertile fields the yield is far more remunerating than some of the root crops. It can be sowed as late as July, and fed out to milch cows or beef cattle during the drought of autumn, or cured and used

as winter fodder. It is more nutritious than most of the cultivated grasses from the amount of saccharine matter it contains. It leaves the ground in good condition, and as it is not left to ripen its seed, is not considered an exhausting crop.

We have not unfrequently noticed, in our travels through the county, that some of our otherwise good farmers are in the habit of ploughing their silicious loamy lands in the fall, under the erroneous impression that the soil is benefited by exposure to the frosts of winter. On a soil of an opposite character, of an argillaceous texture where clay predominates, this mode of husbandry is beneficial. On these, the frosts of winter have a tendency to render the soil more permeable and less compact; on the other hand, a sandy soil will retain its adhesiveness and be more retentive of moisture if ploughing is omitted till the season for planting arrives.

A great diversity of opinion has always existed in relation to the application of manure. The advocates and opponents of ploughing under have generally contended in the dark; they have each had their experiences; the one on a warm silicious soil, the other on a cold, tenacious or clayey soil; and while the former have reaped the benefit from turning under, the latter may have had cause to deprecate the practice.

On our warm sandy soils, we have for many years been in the habit of ploughing in our manure for the corn crop, and whenever we have adopted the other method we have invariably had cause to regret it. From several experiments, made with considerable accuracy, we find that where the manure is turned under, the soil retains its fertility much longer; on such soils we think there is much more danger from evaporation than from infiltration.

Perhaps the time has not arrived for the introduction and general use of the phosphates in this county. It is asserted, by many scientific writers, and practical agriculturists, that the super-phosphates of lime, or their components, do not exist in sufficient quantities in our old cultivated fields for the perfect development of plants; that the manures ordinarily applied do not contain a sufficiency of these salts for the sustenance of crops, and an analysis of these soils demonstrates their absence.

Professor Mapes says :—" During the last year we have examined more than one hundred soils, and no one case has occurred where this amendment was not needed." He further says, "that five hundred pounds of this super-phosphate of lime, (at a cost of about $25,) has been found, by frequent experiments, to be fully equal in value to twenty cords of well rotted stable manure, whilst its cost is not so great as the carting of that commodity two miles."

This amendment is engaging the attention of agriculturists both in Europe and America; and in the State of New York its effects are represented as wonderful, applied in moderate quantities; their wheat crops having been more than doubled. All soils are benefited by its application, but on sandy soils it is said to be more permanently valuable than other manures, from the fact that it is not volatile, and remains in the soil until consumed by the plants. Experiments on a small scale might test its value on our soils; caution, however, is necessary in the adoption of any new theory, from however high a source it may emanate.

We have the dawn of a brighter day in the establishment of the Massachusetts Board of Agriculture. Much practical information will be diffused and sent broadcast through the Commonwealth. Under its auspices it will be impossible that agricultural science shall remain stationary; even *our* "gravel hills and sand banks" are yet destined to take no secondary position among the more favored counties.

The cause of agriculture is onward. The late lamented Judge Buel said :—" A German, by means of study, and observation, aided by a long course of practical experience, in husbandry, has been able to ascertain the degree of exhaustion in fertility which soils ordinarily undergo from the growth of common grain crops, and how much the fertility is increased by a given quantity of manure and by pasture,—and thus teaching how to maintain or increase the fertility of the soil, and consequently its products and profits from the resources of the farm."

In addition to what is now contemplated by said Board, competent professors should be employed to make analyses of soils, in order to ascertain what elements have been exhausted by excessive cultivation, and prescribe the fertilizing agents

requisite for their permanent improvement; and as all soils are not benefited alike by barn manures, we should call science to our aid in order to discover the missing ingredients necessary to constitute a fertile soil.

In retiring from the office which I have held for three years, I would tender to the trustees and members of this association my grateful thanks for their uniform kindness and courtesy. The interest I feel for the permanence and success of your society will suffer no diminution in retirement from a more active participation in its duties and labors.

Respectfully submitted,

HORACE COLLAMORE.

Daniel Alden's Statement.

FOREST TREES.

The tract of land planted to forest trees, which I entered for the society's premium, payable in 1852, was a barren sandy plain, remote from any habitation, and the memory of man extends not back to the time when it was first reclaimed for the cultivation of Indian corn. It was exhausted many years ago by a succession of grain crops with little or no manure; in 1835 the last crop of corn was raised. In the fall of 1836 I planted about two acres with white pine seed, and in March, 1837, the remainder of the lot, in all six and a half acres.

In the fall of 1839, I planted three bushels of white oak acorns, with very poor success, as the most of them failed to vegetate. In November, 1840, I sowed white birch seed on the whole lot, with good success. In March, 1841 and 1844, I planted the then existing vacancies with white pine. In March, 1845, I planted one and a half bushels of walnuts. In April, 1846, I planted one bushel of walnuts, which have come up well, but are of slow growth. In June, 1849, I transplanted about 300 white pines, the most of which lived and are doing well, but are not so vigorous as those planted in April. In April, 1850, I again planted all the then existing vacancies with white pines, which have generally vegetated and are doing well. On this lot of six and a half acres, I have now growing, something more than ten thousand trees, of various

kinds, and some of them apparently nearly ripe for the axe; the whole forming a very handsome young wood lot, intrinsically worth nearly as many dollars, at this moment, as it was worth cents, before the forest trees were planted.

From my experience in raising white pines, I can confidently recommend spring in preference to fall for planting. Those planted in the fall vegetate too early and are killed by the late frost of spring. I would suggest that the best season for planting the pine seed is from the 20th of March to the 1st of April; and the proper time for collecting the seed is from the 25th of August to the 10th of September; and before the burrs open, they should be spread on a tight scaffold, and when perfectly dry, can be threshed with a flail without injuring the seed. The seed of forest trees will only germinate once in three years.

Seth Sprague's Statement.

COMPOST MANURE.

Being a competitor for the greatest quantity of manure, I take the liberty to state that I have kept the past year twenty head of cattle, four horses and six hogs. My barn, 40 by 32 feet, has a cellar under the whole, with a shed 10 feet wide, to secure all the green manure thrown out, from the sun and rain. 40 by 20 feet of this cellar is fitted for the preservation of roots, of which I have now fifteen hundred bushels of turnips, beets and carrots. I have a peat swamp on one end of my farm, from which I take from one to two hundred loads of mud in the autumn. This lies as dropped from the cart through the winter. As soon after our barnyard is cleared in the spring, as our time will permit, we haul this into it, covering it about twelve inches deep, to which we add other material, litter, &c., as opportunity and occasion requires. My whole stock occupy it in autumn, winter and spring, and most of them at night in summer. A shed ninety feet long, secures one side of the yard, the other parts are screened by buildings and a high board fence. The horse manure is dropped into a cellar under the stable, where hogs are kept, having a yard about thirty feet square.

My farm is mostly a sandy, hungry soil, producing a small

quantity of short, dry feed. I have about twelve acres of reclaimed swamp, where I cut about twenty tons of English hay. My practice is to carry my compost from my barnyard, consisting mostly of swamp mud, on to my cultivated sandy soil, and as far as I can, to preserve the green manure of the cattle and horses, and compost it, as soon as planting is over, with sandy soil, gravel, &c., and when well prepared, put it on my English peat meadow. The material furnished the hogs is various. We scrape everything we can, of a vegetable nature, that they can reduce to powder, and that will ultimately decay, and supply them from time to time.

Twenty loads of good compost may be made from the house, with a family of half a dozen persons,—from the sink drain, slops from the chambers, the necessary, &c.,—if proper preparations are made, and material thrown together as occasion requires. I am satisfied that every householder, who cultivates his land, from his small garden to his two hundred-acre farm, can double the quantity of manure usually made, in the course we have pursued in past years. I endeavor to top-dress my low lands, every third or fourth year, with from twenty to forty loads of good compost, which we endeavor to get on as early in October as our other work will allow. I have made the past year six hundred loads compost manure, of good quality, not made for show but for use. The loads carried on to my low ground this autumn not being full loads, we have allowed one hundred loads to be certain of giving full forty entire cubic feet to the load, and still have a quantity to spare on hand.

Josiah L. Bassett's Statement.

I have made and measured four hundred and forty-three loads of manure the past year, (forty cubic feet to the load.) It was made in the following manner:—One hundred and seven loads were composed of soil, muck, and manure thrown from the barn during the winter; eight loads of peat ashes and muck; thirty loads were taken from under an old barn, with scrapings from other out-buildings; nine loads were made of soil and muck where it received the wash of two sinks; two hundred and eighty-nine loads were made in a yard connected with a barn cellar, where I yarded my cattle and sheep through

the winter—being fourteen head of cattle and thirty-three sheep —and where I stabled one horse through the year, and one three months. I have yarded, through the summer, on an average, sixteen head of cattle, and had, on an average, four hogs.

Aretas Fobes's Statement.

I have collected the materials of which I made compost manure, to the amount of four hundred and ten loads of forty cubic feet each, during the last year. It is composed of muck, soil, scrapings from the chip-yard and sink-drain, which were composted in my barn cellars and yards with the manure from the stables, where are kept horses and cattle.

Calvin Leavitt's Statement.

INDIAN CORN.

Having entered my name as a competitor for the premium for the greatest crop of Indian corn on an acre, I will give you a statement of the cultivation and expense of the crop. I planted on sward ground; spread on about nine cords of stable manure, made the past winter; ploughed one-half, with a common sward plough, seven or eight inches deep; the other half I ploughed, with the Michigan plough, eleven inches deep; harrowed well; furrowed three feet five inches one way, and dropped the corn as near eighteen inches the other way as possible, putting four corns in a hill; which was done on the 25th and 26th of May. I mixed a half barrel of Mexican guano with a barrel of plaster of Paris, and put a table-spoonful in each hill, on two-thirds of the piece; the other third was planted without any in the hills. A cultivator was used between the rows, and it was hoed twice only; the last time about the 20th of July. The corn planted was the Smutty White, or, more properly, the Hill corn, as I am informed that Leonard Hill, Esq., of East Bridgewater, produced it by a cross of the Southern White with some of our Yankee corn. Expense of carting and spreading manure, $6 50. Ploughing and harrowing, $3 50. Furrowing and planting, $4. Cultivating and hoeing, the season, $11. Guano and plaster, $3. Total, $28. The Mexican guano I used was a worthless article, as I could not

see the least beneficial effect from it, at any season of the year, on the corn crop, or the vine or grass crop. As I tried it on all these crops with a like result, it was a perfect failure. The Michigan plough I think very well of, as my corn suffered least from the drought where that was used.

George W. Wood's Statement.

The acre of land which produced the corn entered by me for premium is a clayey loam. In 1851 I cut about a ton of English hay from it. Ploughed it May 12th, last, and drew on thirty loads of compost manure from hogyard and some from barn; that I spread, then cultivated and harrowed till I made the soil very fine. Planted the corn 20th and 21st of May; planted in rows three feet four-twelfths one way, and fifteen to twenty inches the other way, putting three or four corns in a hill, first dropping twenty loads of compost manure in the hills. The manure put in the hills was made from barn-yard composted soil and barn manure, composted in 1851, and shovelled over till it was quite fine; estimated forty cubic feet to the load.

Soon after the corn came up, ploughed two furrows in each row, turning the furrow from the corn: ran the cultivator twice between each row before hoeing first time. I hoed the corn June 14th, and 26th: ran the cultivator once a week till the corn was too large. July 31, went over and cut up the weeds with the hoe; it kept very clean the rest part of the season. Cut the most of the stalks after they were very ripe. October 18, the supervisor came and selected two square rods in different parts of the field; they averaged $54\frac{1}{4}$ bushels to the rod; that would make $102\frac{10}{85}$ bushels to the acre. Harvested the corn from the 21st to 27th of October. I think I have got 100 bushels of corn from the acre beside what the birds destroyed.

The expense of cultivating was as follows: — Ploughing, $2 50. Cultivating and harrowing, $2. Planting, $5 50. Carting and spreading thirty loads of manure, $4. Ploughing and cultivating, at different times, $2. Hoeing twice, $5. Cutting up weeds, 75 cts. Seed corn, 50 cts. The seed corn I bought of Willard Wood, selected from the best ears at harvest time. Making the whole expense for cultivating, $22 25.

I make no charge for harvesting, for I think the fodder will more than pay the labor of harvesting. The value of the manure exhausted by the corn crop, each one must judge for himself; and also the interest on the worth of land.

Richard Sampson's Statement.

The acre of land entered by me for a premium on corn, is a sandy loam. It had been mowed the five years past, and produced from a ton to a ton and half annually, and was dressed with twenty loads of compost manure during the time it was in grass. The land was ploughed the first week in May, seven inches deep, with the Michigan Sod plough, and eight cords of compost manure spread on the surface, and harrowed twice. It was planted on the 19th of May, in rows, one way, running north and south, three and a quarter feet apart; the hills, in the row, from two to two and a half feet apart, with three seeds in the hill; but in consequence of the protracted dry weather, on something more than one-half of the acre, not more than two-thirds of the seed ever vegetated.

The seed was planted on the surface, without anything applied to the hill when planted. At the time of weeding, there was a small quantity of ashes applied on a portion of the piece, but could not see any difference between the hills ashed and those that were not. I state above that I planted on the surface, and my experience (when manure is not applied in the hill) will justify me in saying that it will do much better than when planted at the bottom of a furrow, on or near the cold subsoil. The corn was hoed on the 12th of June. Twelve days after, it was hoed the second time. July 24th, the surface was stirred lightly with the hoe and cultivator. October 19th, the supervisor weighed two rods, taken from different parts of the field, which yielded $51\frac{1}{4}$ pounds to the rod; which, at 85 pounds to the bushel, is $96\frac{10}{85}$ bushels.

Expenses:—Ploughing, $2 50; hoeing, $5; use of land, $6; manure, $15. Total, $28 50.

I have estimated the value of the corn fodder to be equal to the expense of planting and harvesting.

Martin Leonard's Statement.

The land on which I raised the acre of Indian corn, for which I entered my claim for a premium, is a sandy loam, mowed for three years past without any top-dressing, and producing about 15 cwt. of hay to the acre. Last May, carted on fourteen cords of coarse stable manure, and spread evenly, and ploughed it under eight inches deep; I then harrowed smooth, and furrowed three feet five inches apart one way. Then I dropped the corn in the furrows, three corns in a hill, twenty inches apart, and planted the 24th of May; and soon after, dropped a small handful of ashes, mixed with plaster, on each hill; went through with a cultivator three times, and hoed twice. On the 12th, of October, the supervisor selected two rods, from different parts of the piece, which weighed 50 pounds and 6 ounces to the rod; making, at 85 pounds to the bushel, $94\frac{70}{85}$ bushels on the acre; which, at 75 cents, is $71 12

Expenses :—

14 cords manure, at $3 per cord, . .	$42 00	
Carting and spreading the same, . .	6 00	
Ploughing, harrowing and furrowing, . .	3 75	
Planting, $1 25; seed corn, 50 cts.; . .	1 75	
10 bushels ashes, $1 50; plaster, $1; dropping, 50 cts., ...	3 00	
Cultivating and hoeing, ...	4 25	
	$60 75	
Deducting one-half manure, not exhausted,	21 00	
	$39 75	39 75
Net profit, ...		$31 37

I consider the fodder to pay for harvesting and interest on the land.

Jonathan Copeland's Statement.

The three acres of land on which my corn was grown is a yellow loam, an old field considered worn out. I bought it, several years ago, for $15 25 per acre. The last of April and first of May, we put on forty-five loads of manure from my barn cellar, probably forty cubic feet in a load; also two tons

of meadow hay, spread the same on the sward. I ploughed the ground full seven inches deep, deeper than it had heretofore been ploughed. We put on fifteen loads of fine manure, which was put in the hills; also twelve bushels of ashes, and an equal quantity of manure, taken from under where my fowls roost, mixed with the ashes. Planted three feet six inches apart both ways. Commenced planting the 12th of May, with the Whitman corn, so called. The seed was selected when we husked the previous crop. We hoed three times, using the cultivator twice and plough once. The land was very light all summer, and did not suffer at all from the drought. I did not cut my stalks until late,—middle of September. We probably have neglected this kind of land; it is always warm, and well adapted to Indian corn.

N. B.—I will state that my corn cost me less than fifty cents per bushel.

Spencer Leonard, Jr.'s, Statement.

The two acres entered by me for the best field of Indian corn, of not less than two acres, is a light sandy soil. It has been in grass two years; and in June, 1851, a light crop of clover was taken off; and the 25th of July, it was ploughed seven or eight inches deep, and sowed to rye in August, applying one hundred bushels leached ashes to the acre. The present year, about five cords manure were spread to the acre, and, with the rye, which had attained an height of about eighteen inches, were ploughed under, well harrowed, and planted the 22d and 24th of May. It was planted three feet five inches apart, one way, and one foot six inches the other, putting three corns in a hill. A handful of leached ashes was put upon each hill after planting. A cultivator was used between the rows four times, and it was hoed three times. The corn planted was the Smutty White, and was selected at the harvesting of my corn last year, selecting the driest, fairest, and best filled ears. The stalks were cut about the middle of September. I consider the corn fodder to pay for cutting the stalks and harvesting.

EXPENSE.

Ploughing, sowing rye and harrowing, in 1851, .	$5 00
Two bushels rye sowed, ...	1 84

Ten cords manure, carting and spreading,	$50 00
280 bushels ashes, carting and spreading,	34 00
Ploughing in manure and rye,	4 50
Harrowing and furrowing,	2 00
Planting,	4 00
Cultivating,	2 50
Hoeing,	11 50
Seed corn,	75
Interest on land,	6 00
	$122 09
Amount of corn obtained, as measured by the supervisor, $188\frac{40}{56}$ bushels,—at 75 cents,	141 35
One-half the manure and ashes, not exhausted,	42 00
	$183 35
Net profit,	$61 26

Horace and Virgil Ames's Statement.

SUBSOILING.

The soil on which we experimented in subsoiling, for corn, is a hard slate, a little inclining to clay; the subsoil similar. The ground was ploughed seven inches deep, and subsoiled six inches, on the 7th and 8th of May; and on the 19th and 20th, it was planted. It was cultivated and manured alike; in fact, treated just alike, except the subsoiling. The difference in product was four bushels shelled corn at harvest time, say 1st November.

There was quite a perceptible difference in the cultivating that which was subsoiled and that which was not, the subsoiled appearing much the lightest. We expect to be benefited in the after-crop, as we think the effects of subsoiling will be somewhat lasting.

We think that two dollars per acre would be a fair compensation for subsoiling common greensward land; as far as our trial went, it was not harder work to plough the subsoil than the sward above.

Benjamin Hobart's Statement.

I ploughed one acre of ground on the 1st of May, and subsoiled one-half of it. Put on the whole, twenty-five ox-cart

loads of good compost manure, forty cubic feet to a load; spread and ploughed it in. As it became very wet, I could not sow it, and had to plough it again about the 20th of May.

After drying two or three days, harrowed it over, and, on the 26th of May, sowed two and one-quarter bushels wheat on the piece and harrowed it in; sowed grass seed and bushed it over twice. It was sowed two weeks later than usual, and although high ground, it could not be sowed sooner.

The soil was of a slaty mould. I found I did not sow seed enough and it did not come up well, and it became very dry and continued so for weeks, and, in fact, all the season. I reaped it on the 23d of August, and did it out September 24th, 1852, by a horse-threshing machine.

The result on the subsoiled part, $8\frac{1}{2}$ bushels; on the part not subsoiled, $5\frac{1}{8}$ bushels; making in the whole, $13\frac{3}{8}$ bushels.

This showed much in favor of subsoiling, and it shows its benefit in a very dry season, as the last was. I subsoil now, yearly, all my cultivated land, and find it very useful.

Spencer Leonard, Jr.'s, Statement.

SMALL GRAINS.

The land on which I raised my barley was planted to corn last year, and produced a heavy crop. This year, April, 30th, it was ploughed about eight inches deep, and May 4th, $3\frac{1}{4}$ bushels seed was applied, and well harrowed and rolled; no manure having been applied since taking off the corn. It was cut about the middle of July and threshed soon after. Obtained thirty-two bushels on one acre and six rods. Expenses: $3\frac{1}{4}$ bushels seed, at 75 cts. per bushel, $2 44. Ploughing, $1 60. Sowing seed and harrowing, $1 56. Rolling, 33 cts. Cutting and getting in, $1 75. Threshing and cleaning, $5. Total, $12 68.

Benjamin Hobart's Statement.

ROOT CROPS.

Ploughed one-half acre of land, and subsoiled it the first week in May, of a good loamy soil, which was in corn last year from greensward. Spread on the same thirteen loads, of forty

cubic feet to a load, of good compost manure, principally from the horse stable. Divided the half acre into two quarters, and planted one-quarter to beets on the 24th of May, and one-quarter to carrots, on the 28th. One-half was mangel wurtzel, and the other, White French sugar beets, and long red blood beets. Hoed and weeded them on the 18th and 19th of June, and again in July, and thinned them out. The result, by the measurement of the supervisor, Horace Callamore, Esq., was, of the beets, on the quarter of an acre, a little over 257 bushels of 56 pounds to the bushel, being over 1,028 bushels to the acre.

Seth Sprague's Statement.

The quarter of an acre of land, entered by me for premium for carrots, is a sandy loam, was in turnips last year, the crop of which was very small; having given it at that time an extra quantity of manure and dressed it with ashes and bone dust. I put on, this spring, but few loads of compost manure of middling strength, ploughing and subsoiling it eighteen inches deep, the last week in April. The first week in May harrowed and hand-raked the ground smooth, planted the orange variety with a seed-sower in rows, eighteen inches apart, thinning them to six inches apart in the rows. There were many small vacant spots in two-thirds of the field, sowed with seed purchased in Boston; the other part sowed with seed raised myself, came up very thick and even and had a better growth than the others. They were hoed four times, and harvested the second week in November, previous to which the supervisor measured one rod, gathered and weighed them, and made less than two hundred bushels. The spot was selected by myself, which I considered, at the time, would give less than an average, but not expecting to obtain the first premium, I felt indifferent as to the quantity reported. My men finished harvesting them a few days since, and they inform me that they had a little over three hundred bushels, that they were very particular in weight and measure, and cannot be mistaken. The size and length of the carrots give evidence to the correctness of this report. This I believe is a larger yield than has been reported at any previous time. When this is exceeded, I will try again. I think I can raise four hundred bushels to the quarter of an acre.

EXPENSE.

Ploughing, subsoiling, harrowing, raking, and sowing,	$2 50
Hoeing and thinning, ...	10 00
Harvesting, ...	7 00
	$19 50

The tops given to my cattle, were worth as much as the compost put on.

Jonathan Copeland's Statement.

The quarter of an acre entered by me for premium on carrots, was the same that I had carrots on last year. The middle of April we put on ten cart-loads of manure, and ploughed it in nine inches deep. The 20th of May, ploughed the ground again, harrowed and brushed it, and commenced sowing by hand, in drills, eighteen inches apart; seed, orange variety. It took two men one day to sow them, and six days' work to weed and thin them out. My carrots are about as large at the top as they were last year, but not so long and heavy. I think the ground wants stirring with a subsoil plough.

Abiel Bassett's Statement.

ONIONS AND WINTER SQUASHES.

The quarter of an acre of land I entered for premium on onions, is a light mould; it was in onions last year. The 16th of April I put on ten cart-loads of stable manure, which was spread and well ploughed in; the 21st I spread on forty bushels of dry ashes, and sowed the seed with a machine. I raised my own seed the year previous. The hoeing and weeding were done by odd jobs, which I estimated at about six days' work. October the 5th the land was surveyed, and the onions measured on one square rod, which produced 4¼ bushels, which would be 680 bushels to the acre. The certificate of the surveyor, I enclose in this communication.

BRIDGEWATER, Oct. 5, 1852.

I hereby certify that I have this day measured, for Deacon Abiel Bassett, one-fourth of an acre of ground, on which he has raised onions the present season, and selected one square

rod thereof, which I judged to produce an average of the whole, and measured therefrom four bushels and one peck.

Isaac Fobes, *Surveyor.*

I hereby certify that I assisted in pulling and cutting off the tops of the above-said onions, and witnessed measurement, which was as above-stated.

William H. Livermore.

Austin J. Roberts's Statement.

I have raised this year, on one-quarter of an acre of ground, 4,942 pounds of squashes, or 2 tons 942 pounds, which is at the rate of 9 tons 1,768 pounds per acre.

The sward was turned over on the 1st of May, the soil being a light gravelly loam. Holes two feet in diameter and one foot deep, were dug, ten feet apart each way. To each hole three large shovelsful of a prepared compost was thoroughly mixed with the earth taken out, and the holes refilled. About the middle of May, the seed was sown; the unnecessary plants were pulled up, leaving only three of the thriftiest. When they were two inches high, two quarts of unleached ashes were strewed around each of the hills and slightly hoed in. Bugs by-and-by appeared, but were happily made sensible that a strong solution of quassia and tobacco rendered the vines unpalatable.

The variety raised was the custard squash, which I have cultivated for the last three years with satisfaction, and which has been improved with me, in flavor and color, by crossing it with the marrow squash. It readily sells in large cities, at remunerating prices.

Nathan Whitman's Statement.

The land, one-quarter of an acre, on which I raised my squashes, was last season, planted to potatoes. I ploughed it deep, say seven inches, harrowed and rolled it, then furrowed it five feet apart one way, and put on six loads of good manure from barn cellar, and dropped it in the furrows, five feet apart. In August, went through with one furrow in each row,

pulled out the weeds and thinned out the squashes, leaving three vines in each hill, half crooked necks and half marrow-fats. Gathered from the same, 4,523 pounds.

Dairy.

The committee on the dairy have attended to the duty assigned them, and submit the following report:—

There were thirty-one entries for a premium on butter, and your committee have awarded the following:

Mrs.	Nahum Leonard, West Bridgewater,	$7 00
"	Lydia D. Holmes, Bridgewater,	6 00
"	Julia A. Holmes, "	5 00
"	Thalia E. Weston, Middleborough,	4 00
"	Pardon Copeland, West Bridgewater,	3 00

The number of claimants for premiums on cheese was fourteen.

Mrs.	Lydia W. Eddy, Middleborough,	$7 00
"	Thalia E. Weston, "	6 00
"	Rachel Allen, Bridgewater,	5 00
"	William Tillson, Halifax,	4 00
"	Nahum Snell, West Bridgewater,	3 00

Respectfully submitted,

Calvin B. Pratt, *Chairman.*

Horses and Colts.

The committee on horses and colts have attended to their duty, and report as follows:—

There were no horses entered for premium. There were sixteen colts entered, which were very good, and it was with some difficulty your committee could determine on which to recommend a premium; but, after a careful examination, we recommend the following:—

Charles Shaw, of Middleborough, for 1 two-year old colt, first premium, ... $8 00

George King, of Bridgewater, for 1 three-year old, . $5 00
Austin J. Roberts, Middleborough, 1 " " . 4 00
Jonathan Howard, West Bridgewater, for 1 two-year old colt, one vol. Boston Cultivator; Elijah Cushing, of Hanson, 1 three-year old colt, one vol. Mass. Ploughman; Seth Stoddard, Hingham, 1 one-year old colt, one vol. N. E. Farmer.

Respectfully submitted,

NAHUM M. TRIBOU, *Chairman.*

STOCK.

The committee on stock beg leave to report that the number of cattle, in their department, entered for premium, was not so large as that of last year; nor were they generally, in point of quality, as good. There were but three milch cows exhibited, which is smaller than the usual average number. A good cow, of native breed, was entered by Isam Leonard, of Bridgewater, concerning which Mr. Leonard says:—"The cow entered by me for premium is six years old, and was raised on the farm. She calved on the 16th of May last; the calf, at four weeks' old, weighed eighty-five pounds. She was milked three times a day after the calf was taken away, giving sixteen quarts per day. In fifteen days in June,—from the 15th to the 29th, inclusive,—she gave 240 quarts of milk, from which were made 35 pounds of butter. In fifteen days in September, she gave 13 quarts per day, from which were made 23¾ pounds of butter. She had no meal or grain."

Josiah Whitman, of East Bridgewater, says of his cow:—"The cow which I present for premium is partly of native and partly of Durham blood, and was five years old last April; on the 27th of which month she calved. I sold the calf, at five weeks old, for $7, it weighing at that age 100 pounds. My cow had pretty good pasture in June. In September, feed being short, I soiled her upon corn fodder, sown for that purpose. In ten days, in June, she gave 305 pounds 8 ounces of milk, from which were made 16 pounds 4 ounces of butter. In ten days, in September, she gave 265 pounds 2 ounces of

milk, from which were made 12 pounds 2 ounces of butter. Total butter made in twenty days, 28 pounds 6 ounces."

The three-year old heifer of Lewis Leonard, of Bridgewater, gave, as appears from his statement to the committee, in ten days in June, $10\frac{1}{2}$ pounds of butter; and in ten days in September, $8\frac{3}{4}$ pounds.

The two-year old heifer of Josiah L. Bassett, of Bridgewater, gave, in ten days in June, 9 pounds of butter; and in the same number of days in September, $7\frac{1}{2}$ pounds.

The heifer of Sidney Packard, of East Bridgewater, eighteen months old, attracted a good deal of attention. She, and also that presented by Nahum Snell, of West Bridgewater, two years old, were not inferior, the committee are inclined to think, to any of the same class of animals which have heretofore received the bounty of the society on any former exhibition.

The committee regret that Mr. Kingman, of North Bridgewater, gave no definite statement with regard to his bull; simply saying of him that "he is of the Ayrshire and Durham breed." This bull was of good form; but the committee must say that neither he nor any other offered for their inspection and judgment seemed at all distinguished for remarkable properties.

Other stock were examined by the committee, which they have not time to make particular mention of; they therefore recommend the following award of premiums:—

For the best milch cow—

1. Isam Leonard, Bridgewater, ...	$8 00
2. Josiah Whitman, East Bridgewater, . .	5 00
3. Benjamin Crooker, Bridgewater, . . .	3 00

For best heifer having had a calf—

1. Lewis Leonard, of Bridgewater, . . .	5 00
2. Josiah L. Bassett, of " . . .	3 00

For best heifer not having had a calf—

1. Sidney Packard, of East Bridgewater, . .	4 00
2. Nahum Snell, of West Bridgewater, . .	2 00

For best bull—

1. Eliphalet Kingman, of North Bridgewater, .	5 00
2. Isaac Pratt, of Middleborough, . . .	3 00

For best bull calf—

1. Isaac Pratt, of Middleborough, . . . $3 00
2. William Dunbar, of Bridgewater, . . . 2 00

For best heifer calf—

1. Samuel W. Baker, of Bridgewater, . . 3 00
2. Calvin Chamberlain, of East Bridgewater, . 2 00

For two-year old heifer and calf, Nathaniel Cross, of North Bridgewater, a gratuity of 2 00

They also award one vol. Mass. Ploughman to Edmund Q. Sylvester, for a one-year old bull; and one vol. N. E. Farmer to Henry Hall, of Bridgewater, for a one-year old heifer.

Respectfully submitted,

Horace Ames, *Chairman.*

Swine.

[The committee report that 54 swine were entered. Only six premiums were offered. The following premiums and gratuities were awarded:—]

First premium, for boar, to Calvin Leavitt, Bridgewater, pure Suffolk breed, 7 months old, ... $4 00

Second do. do., to George King, Bridgewater, three-fourths Suffolk, one-fourth China, 17 months old, . 3 00

First premium, for breeding sow, to Joseph C. Norton, Bridgewater, pure Suffolk, 17 months old, . . 4 00

Second do. do., to Amasa Howard, West Bridgewater, one-half Suffolk, one-fourth Middlesex, one-fourth native, 15 months old, ... 3 00

First premium, for best litter of weaned pigs, to Cromwell Alden, Bridgewater, three-fourths Suffolk, one-fourth native, 4 months old, ... 4 00

Second do. do., to Nahum Snell, West Bridgewater, one-fourth Suffolk, three-fourths native, 2 months old, 3 00

Gratuity to George B. Stetson, Bridgewater, for one pair of pure Suffolk pigs, 6 months old, from the im-

ported stock of G. G. Hubbard, Esq., of West Needham, very handsome, ... $3 00

Also a gratuity to Joseph C. Norton, of Bridgewater, for four pure Suffolk pigs, over 6 months old, . . 3 00

Respectfully submitted,

Dion Bryant, *for Committee.*

Ploughing.

The committee on ploughing submit the following:—

They found on the ground selected for ploughing, at the appointed time, sixteen teams, and ready to commence their labors. Eighteen teams were entered. The lot selected was a stiff, hard soil, some tough meadow grass roots, with some gravel and hard pans, and taking it altogether, it was very hard ploughing. Still they performed the service in the time appointed them, and your committee are happy to say, they generally performed the work well. As we had money premiums and papers allowed us, sufficient for all, we have awarded to each competitor something, with the exception of one.

We awarded as follows:—

1. Philander Wood, of Bridgewater, ... $10 00
2. Francis Copeland, " 9 00
3. Abram Washburn, " 8 00
4. Willard Wood, " 7 00
5. Nathaniel Southworth, of Carver, ... 6 00
6. Calvin Chamberlain, of East Bridgewater, . . 5 00
7. George W. Bates, of Bridgewater, ... 4 00

John J. Howard, of do., one vol. Massachusetts Ploughman.

Albert Thomas, of Middleborough, one vol. of do.

Paul Hathaway, " " one vol. of do.

Elijah H. Leonard, of Bridgewater, one vol. of the Boston Cultivator.

Kenelm Winslow, of Bridgewater, one vol. of do.

Horace Ames, " one vol. of do.

Daniel Shaw, of Carver, one vol. New England Farmer.
Ira Conant, of Bridgewater, one vol. of do.

Respectfully submitted,

Abram Washburn, 2d, *for Committee.*

Steers.

Your committee on steers, submit the following report:

There were entered for premium, five pairs of three years old, one pair of two years old, and one pair of one year old; and we recommend the following premiums:—

Chipman Porter, of Halifax, for one pair of three-year old steers, first premium, ... $5 00
Seth H. Leonard, of Bridgewater, for one pair of three-year old steers, second do., ... 3 00
Philander Wood, of East Bridgewater, for one pair of two-year old steers, first premium, ... 4 00
Elijah Cushing, of Hanson, for one pair of one-year old steers, (twins,) broke and presented by his boy, nine years of age, ... 3 00
Aretas Fobes, of Bridgewater, for one pair of three-year old steers, one vol. Massachusetts Ploughman.

Respectfully submitted,

William Tillson, *Chairman.*

Working Oxen.

The committee on working oxen, have attended to the duty assigned them, and make the following report:

There were nineteen yoke of oxen presented for premium, and we recommend as follows:—

1. Willard Wood, of Bridgewater, ... $7 00
2. George W. Bates, of " 5 00

3. Aretas Fobes, of Bridgewater, ... $3 00
4. Abram Washburn, 2d, of Bridgewater, . . 1 00

Paul Hathaway, of Middleborough, one vol. Massachusetts Ploughman,

Nahum M. Tribou, of Middleborough, one vol. of do.

Galen Conant, of Bridgewater, one vol. Boston Cultivator.

Nathaniel Southworth, of Carver, one vol. of do.

Philander Wood, of Bridgewater, one vol. N. E. Farmer.

Elisha G. Leach one vol. of do.

WALDO HAYWARD, *for Committee.*

BEEF CATTLE.

The committee on beef cattle have attended to their duty, and make the following report:

There were thirteen fat oxen entered for premium, and we recommend as follows:—

1. Bela Hill, of East Bridgewater, ... $10 00
2. " " " 7 00
3. Cyrus Washburn of Middleborough, . . . 5 00
4. Kenelm Winslow, Bridgewater, ... 3 00

There were six fat cows entered for premium.

1. Abram Washburn, of Bridgewater, . . . 6 00
2. George King, " " . . . 4 00

Martin Leonard, of do., one vol. Mass Ploughman.

Nathan Willis, " " "

Philander Wood, " " "

Jonathan Howard of Bridgewater, one vol. Cultivator.

Benjamin Hobart, " "

Ebenezer Hathaway, " "

Richard Thayer, " N. E. Farmer.

Reuben Thompson, of Plympton, " " "

Cyrus Washburn, of Middleborough, " " "

Your committee recommend that there be one more premium added to the fat cows in future.

Respectfully submitted,

JOHN TILDEN, *Chairman.*

COMPOST MANURES.

BY J. E. HOWARD.

At the annual meeting of the trustees, held at Bridgewater, November 10th, 1852, the following remarks on compost manures, having been read by J. E. Howard, of West Bridgewater, were ordered to be printed with the Transactions of the Society.

Mr. President,—I beg leave to submit for the consideration of the trustees, a few remarks on the "manufacture of compost manures, and their application to the various soils of this county." Leaving the contest for the prizes proposed, to abler pens than mine, I would merely offer a few hints on a subject upon which the trustees have manifested a wish—hitherto not responded to—to provoke discussion. I do this, let me add, in the hope that, should any be suggested worthy of being recalled, they may be turned to profitable account; and that, on the other hand, should it be otherwise, the attempt with the attending circumstances, may be speedily forgotten. Before proceeding, however, I must be permitted to make a few preliminary observations on another subject.

It unfortunately happens that errors in practise sometimes spring from a misconstruction of sound, no less than from the adoption of false maxims of conduct. To illustrate this remark, I would cite the often repeated aphorism, that "in the vegetable as in the animal kingdom, like produces like." Now this doubtless is true, but not, it is believed, in the sense in which it is sometimes understood. An interpretation is not unfrequently given to this law of reproduction, which neither facts nor sound philosophy seem to warrant.

Intimately connected with the preservation and happiness of the different orders of beings that inhabit our earth is the continuation of the different varieties of plants which it is adapted to produce. Hence each perfectly developed seed, of every species, is endowed with the power of producing a plant *sui generis*, of its own kind, and capable in its turn, of bearing

seed. Thus a succession is established which is to continue; and to which as well as to other objects, look forward those instinctive anticipations implanted in every breast, upon which the successful conduct of human life essentially depends. Divine wisdom and goodness have ordained that every plant shall produce after its kind. It is not necessary to suppose, however, that the offspring must always, and in every particular be an exact counterpart of the parent plant. On the contrary, the fulfilment of this decree is perfectly consistent with marked and striking accidental differences between them. A hill of Indian corn grown under the most unfavorable circumstances, will exhibit the widest possible contrast as to external appearance, and amount of production, when compared, in recollection, with its immediate predecessor from which the seed was taken, grown under circumstances entirely the reverse. And yet no obstacle which such diversity interposes, will prevent an easy recognition of their identity of species. Characteristic resemblances will always be too strong for this. Hence no dissimilitude of such a nature can, in any case, be justly construed into a violation of the generic law that " like produces like."

Besides, if it be a physiological fact, as we are assured it is, that all the nourishment stored in the seed is consumed in developing the germ and the first radical fibres, it necessarily follows that the seed can supply, beyond this, no nourishment for the further growth of the plant; so that whether it attain to a comparatively large or small size only;—whether it put forth few or many roots, branches, twigs, leaves, and blossoms; —or whether it bear little or much fruit, will depend not upon the seed, but upon the action of influences, and the presence of conditions wholly extrinsic and independent of the seed.

If these views be correct, therefore, it is an error to suppose, as is frequently done, that the kernels from the more prolific stalks of Indian corn, for example, are endowed with a mysterious power of production not possessed by those of the less prolific, the latter being perfectly developed and of the same crop and variety.

I have thus alluded to this prejudice, as I must term it, having been hardly able to resist the temptation offered by the present occasion to do so, even though I should thereby render

myself obnoxious to the charge of travelling somewhat out of the record, and touching upon things irrelevant. I now proceed to submit a few observations more immediately connected with the subject matter under consideration.

Concerning the county of Plymouth, the opinion seems to be more prevalent than it formerly was that her soils are adapted to the culture of fruits. And judging from the reports of officers, and the statements of competitors for premiums proposed by the trustees of this society, to encourage the raising of Indian corn, there is, at least, one other crop which can be grown here with something more than tolerable success. Indeed, the magnificent results which have been attained in the culture of this plant, could hardly have been predicted, little more than a quarter of a century ago, without incurring the imputation, I had almost said, of mid-summer or some other madness; so little encouragement did the meager experience of that period give to any just expectation of such unlooked for issues. What has been achieved is alike creditable, allow me to say, to the parties who have reaped and are still reaping their reward, and to the society. It had been thus creditable in fact, had the efforts of the former been crowned with a success less brilliant; since something might well have been spared from the superabundance of production, in some instances, and enough still have been left, one would think, to satisfy the reasonable ambition of any reasonable man.

Competitors have satisfactorily demonstrated that by a course of deep manuring with ordinary composts, heavier crops may be grown on congenial soils, under favorable circumstance, than it had been thought possible to produce. For this they are entitled to our gratitude, and to that of the public no less. Yet notwithstanding what has thus been done, it must nevertheless be admitted that little progress has been made in practically elucidating the momentous question with reference to what combination or combinations of matter, in the form of manure, are best adapted to supply the various elements of nutrition to this great staple of our country. Individual experiences have been too nearly alike, practise too little diversified, and not sufficiently influenced by theory;— nature has not been often enough carefully interrogated in the field, to afford *data* sufficient to warrant any satisfactory con-

clusions on the subject. Intelligent agriculturists may have displayed industry, skill, energy, and perseverance, without stint. They may have evinced an honorable ambition for excellence, and a desire to bear away the prize;—may have used all diligence to enlarge the dimensions of their manure heaps;—but whatever else has been done, they seem to have contributed little towards augmenting the stock of materials for rural science.

It has often been substantially said, and very justly, that in agricultural as in many other active pursuits, art and science should go hand-in-hand. It is equally true, that in no department of his calling is this more necessary to the practical farmer, than in that of the preparation of his composts. Let us look at the subject a little in this point of view.

Composts may be considered well adapted to soils, when they are formed by combining with the feces and liquids of stock, different loams, and vegetable matter in the form of muck in a finely divided state, in quantities varying according to the varying characters of those soils; that is, as they are more or less warm and light, on the one hand, or dark and heavy on the other: those being designed for the latter in which the loamy portion of their ingredients are made to preponderate, and the reverse. This method the practical good sense of many farmers readily suggests to them; and that it is, so far as it goes, good husbandry, there can be little question. The double purpose is thereby accomplished of benefiting crops, and, at the same time, permanently improving the soil.

There are, however, as is well known, other methods of improving soils, not involving a course of manuring. The most common of these are, perhaps, those of deepening—a gradual process—draining, and mixing, or changing the relative proportions of their respective ingredients, to some extent, with a view to modify their relations to light, heat and moisture, and neutralize the pernicious influence exerted by any single one existing in great disproportion to the rest; as sand, clay and vegetable matter are often found to do.

These are common operations at the present day, and they are resorted to as remedies for serious evils; remedies easily discovered, fortunately, and often easily applied; and this, too, without the aid of chemical analysis. But in further fulfilling

the requirements of an enlightened system, a more difficult task awaits the intelligent husbandman, in the proper adaptation of manures to the different crops to be cultivated. This is a matter of great moment, as the highest success in his calling will essentially depend upon the degree of intelligence, skill, and persevering industry which shall be made tributary thereto. But apart from all considerations of material interest merely, it must not be forgotten that he, who, in this enlightened age, should persist in treating every crop with an unvarying compost, will soon come to be viewed much in the same light with the medical practitioner who should always prescribe one and the same remedy, without regard, in any particular case, either to the nature of the disease or the idiosyncrasy of his patient. In order, however, to attain any desirable success in the way of such adaptation, the aids of science must be invoked. They must be sought chiefly, perhaps, in the first place, for the purpose of ascertaining the chemical composition of the plants to be grown. This is essential, since the elements of which they are individually composed, are identical, in kind, with those which form their peculiar and appropriate nourishment. They must be sought, in the next place, in order to reveal the sources whence such nourishment can best be derived. To give, in few words, a partial illustration of this, I would remark that analytic chemistry has shown, with reference to Indian corn, for instance, that the principal substances,—those which it most concerns the farmer to know,—entering into its composition are, potash, soda, magnesia, phosphorus, silica, sulphur, and nitrogen. And in doing this, it has also, at the same time, indirectly shown that these constitute its appropriate food, and hence are indispensable, in some form, to its perfect growth and development. The entire absence of either would prove fatal to the crop; and a redundance of the rest, would not compensate for an inadequate supply of any single one. So, if I mistake not, are we instructed to believe.

Now potash, soda, magnesia, &c., or any combinations of them with acids, are not different things here from what they are in the county of Bristol, or anywhere else. They are the same everywhere. All composts for corn, then, whether designed for the soils of Plymouth County or for those of any other, should be adapted to supply it with appropriate food;

that is, should be adapted to supply these substances. Here is a precise and definite object, which, if these observations be correct, should be kept constantly in view; and, for the successful prosecution of which, all farmers who go into this culture should endeavor to prepare themselves.

There is nothing peculiar in the circumstances of the farmer of Plymouth County requiring a mode of management, in this regard, differing at all from that necessary to be pursued by others. If the physical constitution of our soil differs, in any respect, from that of other places,—if the silicious element be, as it probably is, more copiously diffused here, in some localities, than it is in many other parts of the State,—it is equally true that it is found to exist, in undue proportion, in some fields of almost every farm, wherever situated; and judicious modes of treating soils in which this, or aluminous mineral, or vegetable matter, are present in greater or less disproportion to the other ingredients, appear to be those of manuring or mixing, according to circumstances, as already suggested. Then as to appropriate manure; it is a most important and interesting question, what are the substances to be incorporated into the usual composts, or combined for separate application, best adapted to supply with them, or otherwise, the nutritious principles above specified? Where is the requisite nourishment to be found, in a state adapted to organize a crop?

Almost all our soils contain such, since almost all of them are capable of producing corn, in a greater or less quantity. Ordinary composts, that is, composts formed of the excretions of cattle kept upon hay, corn fodder, and straw, combined with litter, muck, loam, (one or both,) with or without wood ashes, also contain it, since they serve to augment production; but in neither is it found, at once, in sufficient quantity and in an available form. This is evident from the fact that substances ascertained, by chemical analysis, to be rich in elements in which such composts are comparatively deficient, when employed in conjunction with the latter, will still further augment production. But what are such substances? What will do this? I answer, guano probably will do it; although from my own experience I know not such to be the case. One thing in respect to it is certain, and that is, that the recent agitation of the question concerning the proprietorship of the Lobos Islands,

indicates pretty clearly the estimation in which this substance is held, as a fertilizer, by some nations. Poudrette, properly prepared, will have a similar effect; as will also some other manures, as that prepared by combining muck with corn and cob-meal, in the proportion of five or six bushels of the former to one of the latter, and saturating and fermenting the mixture* with urine. The quality of this fertilizer may be improved, perhaps, by the substitution, for muck, of fine dray, stable manure, whether made from hay, grain and litter, or from hay and litter only. Yet however this may be, my experience enables me to state that a manure, identical in composition with what this last would be, such substitution having been made, and with the exception of corn and cob-meal, none of that having been added, was drilled, in small quantity, with the seed, the past season, on a soil where fine compost had been spread and harrowed in, at the rate of fifteen or sixteen ox-cart loads to the acre, with marked success. It was not long necessary, I would remark, after the blade appeared, to recur, in this case, to monuments, in order to ascertain the local limits of the experiment. That part of the field to which the application had been made, soon became clearly defined; the crop there, although occupying the larger portion of the most unfavorable soil, exhibiting a deeper shade of color, and being marked by a more rapid and vigorous growth than that on the residue of the piece. It also attained an earlier maturity than the latter. Similar comparative results I have uniformly found to follow similar applications of such manures.

A part of another field devoted to the culture of Indian corn, the past season, received a somewhat heavier dressing than the former of compost, which was spread, broadcast, in a finely divided state, and carefully wrought into the surface soil by means of the harrow and bush. Here, too, was drilled with the seed a fertilizer similarly constituted with that last mentioned. Of this more was added to a few hills just before the second hoeing; and to an equal number, in an adjoining row, was applied, at the same time, a small quantity of guano. With reference to these, neither appeared to have any advan-

* If in a moist state when used, soil should be drawn over it with the foot or a hoe, upon which the kernels should be dropped.

tage compared with the other; nor did they appear to have any advantage compared with those on the other parts of the field.

I might add to these details, but it would be unnecessary to do so. I will, however, merely state further, that, from several experiments made in drilling corn and cob-meal with the seed, at planting (a handful to the hill) on soils where compost had been previously spread, I have been unable to perceive from it any favorable influence whatever. Had the meal, in the cases referred to, been previously subjected to the putrefactive process, the results would probably have been different.

Farmers need not be told that corn will produce meat, of this they are well aware; but the fact that the converse of the proposition is true, seems to have been overlooked by them, or, for the most part, practically disregarded. In the view of enlightened theory, the composts which we generally employ to promote the growth of corn are proportionably deficient in certain substances, namely, potash, magnesia, phosphorus, and available nitrogen; or in other words, in the elements of bread and meat. And facts are not wanting which seem to confirm the suggestions of theory on this subject. Let us, then, endeavor to remedy this defect. And that we may stand the better chance of succeeding in this, and in placing ourselves in a condition to be able, when desirable so to do, to supply, as far as practicable, in a state adapted for assimilation, all the nourishment necessary to perfect the growth of this noble plant, let us husband and make the most of all our resources, and look for efficient means of success to what the seed and the cob (to say nothing of the residue thereof) are fitted to supply; and also to what may be derived from the human biped as well as from the brute quadruped.

From what has now been said concerning composts for Indian corn, may easily be inferred, without further taxing your patience, the principles which should govern practise with reference to the mode of preparing appropriate manures for other plants differing from it in their nature and habits. The ash of the potato, according to the analysis of the celebrated M. Boussingault, contains—the tubers, a fraction over 51, and the haulm or tops, a fraction over 44, per cent. of potash. This fact suggests the importance of a liberal use of that mineral,

in some form, in the culture of this plant; and also the important purpose in supplying it to which the tops may be made subservient. Says Leibig, "Give to one plant—so says the rational theory—such substances as are necessary for its development, but spare those which are not requisite for the production of other plants that require them."

Allow me, then, in conclusion, to express the hope that a new and increasing interest may speedily be awakened in the minds of farmers, on the subject of thus properly feeding the plants they cultivate; and that in the benefits which a gratifying success therein shall bring, through the instrumentality of improved systems of education, and increasing facilities for the acquisition and diffusion of appropriate knowledge,—advantages which shall be, at least, in part of their own procuring,—they may reap for their labors a rich and lasting reward.

BRISTOL COUNTY AGRICULTURAL SOCIETY.

The County of Bristol, in respect to the fertility of its soil, is not among the most favored portions of the Commonwealth. In some parts of it, manufactures and the mechanic arts, and, in other portions, commerce and the whale fisheries, are the most important interests. But there is in the county a large body of intelligent farmers; and, recently, agriculture and horticulture have engaged an unusual degree of attention. The Bristol County Agricultural Society has held a respectable, but not a prominent rank among kindred associations. At several periods, public attention has been attracted towards it; but at no former time has so general an interest been manifested in it as within the last few years. The increased interest in agriculture and horticulture throughout the country has been shared by this county. The coöperation of all producers has been invited by this society. Our exhibitions of the products of the county have increased in extent and variety from year to year. Our anniversary has now become emphatically the county festival. Farmers, mechanics, manufacturers, merchants, and professional men, with their wives and children, contribute to the exhibition, and participate in its cares and its enjoyments. It has come to be a day looked forward to with pleasant anticipations by the people of every walk of life. This year, the exhibition, while in a few departments it did not perhaps come up to the standard of some former years, did, on the whole, surpass in merits, beauty and attractiveness, that of any former one. The cattle show and exhibition were held on the fourteenth and fifteenth days of October, occupying two days, as last year; an arrrangement which has proved so satisfactory, that the same course will probably be pursued hereafter.

The exhibition of animals continued from ten o'clock on the

first, to two o'clock on the second day. The ploughing-match and the trial of working oxen were on the first day. The exhibition of agricultural products, fruits, flowers and domestic and other manufactures, was continued through both days, and attracted crowds of visitors, and universal admiration. The hall was arranged with admirable taste and skill by the committee who had that matter in charge, assisted by ladies of Taunton, to whom the society is under great obligations for its success.

A meeting of the members of the society was held on the morning of the second day, october 15, at which officers and committees for the ensuing year were elected. After the transaction of business, the society proceeded to the church to listen to the Address. The day was unpropitious, opening with a violent storm of rain; but, notwithstanding, a full house listened with interested attention to the Address, by the Hon. Robert C. Winthrop, of Boston, which will be found in the following pages, and is now published by the unanimous vote of the society.

After the Address, the procession was formed, under the direction of Theodore Dean, Esq., chief marshal, and proceeded to Templar Hall, where a beautifully arranged and bountiful dinner was partaken of by more than three hundred ladies and gentlemen. Eloquent and interesting speeches were made by the orator of the day, and other gentlemen, of which no report can be made. It ought to be stated, that on this, as on a former occasion, Hon. James Arnold and Hon. James Grinnell, of New Bedford, and Dr. Nathan Durfee, of Fall River, placed at the disposal of the committee of arrangements, for the use of the table, the magnificent grapes, of several varieties, contributed by those gentlemen for the exhibition. At the table, also, the reports of the committees, and the award of premiums, a list of which may be found in the following pages, were made.

The coöperation of all friends of agriculture, manufactures, and the mechanic arts, is respectfully invited to aid the future operations of the society.

J. H. W. PAGE, *President.*

Farm Improvements.

The committee on farm improvements, to whom was referred the claim of Hiram Copeland, of Easton, for a premium for reclaiming one acre and three-quarters of bog or swamp land, ask leave respectfully to report:—

That Mr. Copeland appeared before the committee, at their last meeting in Taunton, and gave an oral account of his *modus operandi* in reclaiming and subduing said land. Mr. Anson Gilmore also verified his statement as to the treatment of the land, and the measurement thereof. Whereupon, in the absence of the written account herewith presented,—which it was then impossible to obtain, it having been left three miles from the town,—and there being no other competitor for the award, the committee voted to Mr. Copeland, for the aforesaid experiment, the premium of $10.

On receiving subsequently the written statement of Mr. Copeland, we are compelled to say, it was not so perfect, full, or explicit, as, from the representations made to the committee, we had anticipated. And we are also of opinion, that, as a general rule, premiums should not be awarded for land thus reclaimed, till the first crop of grass therefrom shall have been ascertained.

All which is respectfully submitted, by

Johnson Gardner, *for the Committee.*

Hiram Copeland's Statement.

The meadow or swamp land, which I offer for our society's premium, is a part of a swamp that was partially subdued in 1824 by digging a ditch through a hill five rods in length and eight feet deep, and covered over to drain the swamp, which was covered with moss and all kinds of bushes. By working from year to year, when it was dry enough, it was laid down to grass, which did tolerably well for some years. After a while, I found there must be something done; for, where the soil is the deepest, it would dry up in a dry time, and kill the grass out; and, where the soil was shallow, would be too wet. This being the case, I tried small pieces, by making the wet

dryer, and the dry part harder and heavy by carting on gravel, and sowed it to grass. I found it did well. The piece of land I offer for premium is a part of the above-named swamp. This summer past, the crop was meadow-grass, rushes, and other wild grass. The last of August, I made under drains, from two to five feet wide, and dug into the gravel from two to eight inches deep, and filled them with small stones, and covered with moss and old hay, and then muck and gravel. I then ploughed and harrowed. I carted on gravel, I should say, 125 loads, and 25 or 30 loads of stones, spread the gravel, and harrowed it in well. I then spread 35 loads of manure to the acre, harrowed as before, and sowed it to grass.

Crops.

The committee on crops would recommend the increase of premium to $15, for best crop of corn.

Messrs. George R. Leonard, and L. B. Goodwin, of Norton, having complied with the rules of the society, in their statements with regard to crop of Indian corn, the committee award to George R. Leonard the first premium for best crop per acre, $10; to L. B. Goodwin, of Norton, the second premium of $8.

Elisha W. Cain, of Taunton, reported to our secretary a wheat crop; but, as no statement, according to the rules of the society, has been submitted, your committee do not feel authorized to allow any premium.

Nathan Durfee, *Chairman.*

George R. Leonard's Statement.

The following statement is submitted in relation to the manner in which was obtained $103\frac{6}{7}\frac{2}{5}$ bushels of corn on one acre of land. The land was sward, and was ploughed the last of May, 1851. I spread about four cords of manure before ploughing, and ploughed about nine inches deep; then spread about four cords more of manure; then harrowed and bushed thoroughly; marked in drills three feet one way, and planted

four corns in a hill, about 20 inches apart, the other way; planted to yellow corn, about the 1st of June; cultivated, and hoed twice. The manure was made from two horses and two hogs. The corn was harvested Oct. 29. The above estimate per acre was made by selecting one square rod in three different places, making a fair average of the lot. The three different rods weighed as follows, viz.: one rod, 47½ pounds; one do. 48 pounds; one do. 50½ pounds; and the corn was very dry when harvested. In addition to the above, there were about three cords of pumpkins on said acre.

VALUE OF CROP.

Pumpkins, three cords,	$10 00
Corn fodder,	20 00
103 6/7 2/5 bushels corn, at 75 cents per bushel,	77 86
	$107 86

EXPENSE OF CROP.

Value of manure,	$32 00	
Ploughing said acre,	3 00	
Drawing out and spreading manure,	3 00	
Harrowing, bushing, furrowing and planting,	2 00	
Cultivating and hoeing,	1 50	
Harvesting,	7 00	
		48 50
Net profit,		$59 36

L. B. Goodwin's Statement.

The acre of land on which my crop of corn was raised, was green-sward in the spring of 1851; had been so for six years; had not been manured for seven years; yield, about one ton hay to the acre, a year.

VALUE OF CROP.

Fodder, worth	$12 50
55 5/16 bushels corn, worth 85 cents,	47 02
	$59 52

EXPENSE.

Manure used in 1851—three cords, say	$12 00	
Seed-corn " " " six quarts,	18	

Ploughing,	$1 50	
Planting,	1 50	
Weeding,	3 00	
Cutting stalks,	1 25	
Harvesting corn,	4 00	
Shelling "	1 25	
		24 68
Balance,		$34 84

This corn was planted in drills, about three feet apart, and in the drills about ten inches apart. The manure was spread broad cast, and ploughed in; it was hoed but twice. Planted with yellow corn, known here as the "Worcester County Corn," as I formerly procured this kind of corn from Mendon, in that county; planted a part the 10th of May, and the remainder the 15th. This corn has all been shelled and measured since the first of December. It measures $55\frac{5}{16}$ bushels.

Butter, Cheese, Bread, and Honey.

The committee to whom was assigned the duty of awarding the premiums of the society on butter, cheese, bread, and honey, have attended to that duty, and report the following premiums, viz.:—

Butter.

William W. Blanding, of Rehoboth, for 25 pounds, first premium, of	$8 00
Abiah Bliss, of Rehoboth, 46 pounds, second do.,	6 00
Luther L. Short, of Taunton, 25 pounds, third do.,	5 00
C. Washburn, Taunton, 25 pounds or more, fourth do.	4 00

White Bread.

Of white bread, there were twenty entries, most of which was very fair; and the committee award to—

Mrs. J. W. D. Hall, of Taunton, for two loaves, the first premium of	$1 25
Mrs. J. A. Hall, of Raynham, for one loaf, second do.,	1 00

Mrs. Amanda Bliss, of Rehoboth, for one loaf of *milk* bread, third premium of	$0 75
Mrs. Lawson, of Taunton, one loaf, fourth do., . .	50
Mrs. E. B. Hall, of Raynham, one loaf, fifth do., .	50

Brown Bread.

Mrs. J. A. Hall, of Raynham, one loaf, first premium,	2 00
Mrs. Jason Morse, of Taunton, one loaf, second do., .	1 25
Mrs. Rebecca Bliss, of Rehoboth, one loaf, third do.,	75

Honey.

Leonidas Dean, of Raynham, two boxes and one large platter, first premium, ...	7 00
Simeon Green, of Mansfield, 29 pounds, second do.,	5 00
W. W. Lothrop, of Taunton, one box, third do., .	3 00

In closing the report, it is thought that a hint to butter makers would not be out of place. Out of twenty lots entered for premium, although there was manifestly an advance on former years, many of them were either too fresh or too salt; so much so as entirely to forbid their claims to a premium.

Of cheese, there were three lots entered; and the third premium of $4 would have been awarded Enoch King, of Raynham, had he have complied with the regulations of the society.

For the committee,

William Reed, *Chairman.*

Agricultural Products.

[The committee on agricultural products reported about fifty small premiums on squashes, pumpkins, potatoes, cranberries, &c.]

Fruits and Flowers.

The committee on fruits and flowers, in discharge of the duties assigned them, have awarded the following premiums:—

Pears.

W. P. Jenney, Fairhaven, for 75 varieties, first prem. of $8 00
H. H. Crapo, New Bedford, 70 " second " . 6 00
Jesse Hartshorn, Taunton, 22 " third " . 4 00
Laban Eddy, Taunton, 7 " fourth " . 3 00

Gratuities for Specimens of Pears, to—

Barzillai Walker, Taunton, ... 1 00
Charles Babbit, " (St. Michael's) . . . 1 00
B. F. Williams, ... 1 00
William A. Crocker, ... 1 00
Daniel H. Leonard, Seekonk 1 00

Peaches.

D. H. Leonard, Seekonk, for 10 varieties, a premium of 3 00

Apples.

Jacob Dean, Mansfield, for 75 varieties, first prem. of 8 00
John A. Hall, Raynham, 50 " second " . 6 00
Jos. T. Leonard, " 32 " third " . 4 00
D. H. Leonard, Seekonk, 21 " fourth " . 3 00

Gratuities Recommended to—

H. G. Ricketson, New Bedford, ... 1 00
J. A. Easterbrook, Taunton, ... 1 00
B. F. Williams, " 1 00
Benjamin Seaver, " 1 00
G. W. Strange, Dighton, ... 1 00
Seneca Lincoln, Norton, ... 1 00

Quinces (gratuities.)

L. B. Church, Taunton, ... 1 00
Elbridge G. Dean, " 1 00
Mrs. George West, " 1 00
Homer N. Daggett, Attleborough, ... 1 00
Jacob H. Thomas, Raynham, ... 1 00

Foreign Grapes.

N. Durfee, Fall River, 8 varieties, first premium, . 8 00
James Arnold, New Bedford, 7 " second " . 3 00
A gratuity to Dr. A. Baylies, Taunton, for Black Hamburgs, ... 3 00

Water-Melons.

W. P. Jenney, Fairhaven, ... $2 00

Baskets of Fruit.

W. K. Bullock, Rehoboth, . first premium of . 4 00
Thomas A. Borden, Attleborough, second " . . 2 00
A gratuity to Nathan Pratt, Taunton, ... 1 00

Bouquets.

Miss Mary N. Mason, Taunton, first premium, . . 2 00
Dr. A. Wood, Dighton, . second " . . . 1 50
Dr. N. Durfee, Fall River, . third " . . . 1 00

Cut Flowers.

James Arnold, New Bedford, first premium, . . . 2 00
Henry H. Crapo, " " second " . . . 1 50
W. P. Jenney, Fairhaven, third " . . . 1 00
Gratuity—John Guthrie, of Taunton, ... 1 00

Your committee also found on exhibition a very choice collection of apples, from the nursery of Silas Moore, of Cranston, R. I., which contributed much to the beauty of the table. For the interest shown in the welfare and success of our society, as well as the beauty and perfection of the fruit presented, your committee recommend that a gratuity of $1 be awarded him. From the same source your committee also found displayed two bouquets, beautifully arranged, from the finest specimens of the Dahlia; and they also recommend that a gratuity of $1 be given Mr. Moore for these.

Your committee are happy to report, that they have found the entries of fruits and flowers the present year largely to exceed in number and variety those of former years. The display of fruits, particularly of the apple and pear, we are confident will very favorably compare with that of any of our sister societies in the State. For perfection, and as exhibiting careful selection and culture, we have never seen an exhibition which would equal it.

The exhibition of peaches was comparatively meagre. This was undoubtedly owing to the lateness of the season,—this fruit for the most part maturing some weeks earlier than the time of holding our annual meeting. Your committee, not thinking that any of the specimens of this fruit merited the

premiums offered, have awarded but one premium, as before reported.

Your committee were also directed to award a premium for the finest display of the plum and the musk-melon. Of the former there was but one specimen exhibited, which, in the opinion of the committee, did not merit a premium; and of the latter no specimen was exhibited.

The committee were also authorized to award a premium of $6 for the best display of the cultivated native grape. There were but few specimens of this fruit presented, and these were all so imperfect and inferior that the committee did not deem it proper to assign to either the reward offered.

Your committee, thinking that the interests of the society would be thus promoted, have distributed, in gratuities before reported, the premiums offered upon those articles of which there have been no specimens presented, or where the specimens presented have been so inferior, as, in the opinion of the committee, not to merit any premium.

They also recommend that hereafter the premiums at present offered for displays of peaches, plums, and the musk-melon, be discontinued, and that a list of premiums be offered for displays of the quince; and that the sums of money now offered for these fruits be applied to the premiums on the quince, and to increasing the number and amount of premiums offered upon apples and pears.

Respectfully submitted.

B. Sanford, *Chairman.*

Ornamental and Forest Trees.

The use and cultivation of trees for ornament is not an introduction of modern times. The garden in the east was furnished with every kind of tree which was "pleasant to the sight," or good for food. There flourished in luxuriance and beauty the

"Cedar, and pine, and fir, and branching palm;"

and on every hill-side and in every valley waved—

"Groves, whose rich trees wept odorous gums and balms,"

beneath whose shade our first parents sat in conversation pure, or leaned in graceful attitudes to rest. In ancient times, the tree was the chosen emblem of life, knowledge, beauty, constancy, fruitfulness, patience, wisdom, power and victory.

The palm, the cedar, the fig, the almond, and the olive tree, were all deemed worthy of dignity and honor; while the "pine, the fir tree, and the box together," were chosen to beautify and adorn the place of the sanctuary.

And what more worthy object of admiration can be found among nature's loveliest productions than a perfect and well-formed tree,—whether we behold it as a single cone, with its exact and symmetrical form, and neat, trim outline, or as spreading its wide and umbrageous head in graceful lines and sweeping curves, or bending its boughs to the earth, laden with bright and golden fruit,—whether standing by itself in solitary beauty, in a fertile, grassy plain, or grouped in an affectionate and harmonious cluster with artistic grace and skill; or ranged in more formal order, by the dusty road-side, refreshing the weary traveller on his sultry way, at once with nourishment and shade,—whether budding forth with the fresh and joyous green of spring, or decked in the rich and gorgeous robes of autumn, or clad with the icy vestments of winter, glittering in the bright sun with the matchless splendor of a diamond mine, —everywhere, in all places, and under every aspect, a perfect, well-formed tree, is an object of beauty and admiration.

> "The sayling pine, the cedar proud and tall,
> The vine-propp elm, the poplar never dry,
> The builder oake, sole king of forests all,
> The aspine, good for staves, the cypress funerale,"

have all received the homage of a poet's pen, while the painter's pencil has vied with the sculptor's chisel in embodying and preserving their various forms of beauty and grace. The cultivation of ornamental trees is the cause and the effect, the antecedent and the consequent, the sign and the produce, of a love for the beautiful and true in nature. It is justly entitled to be classed with the fine arts, and ever tends to elevate, humanize, and refine mankind. What traveller, as he passed some humble, modest, neat-looking cottage, with its well-trimmed grass-plot and overhanging elm, has not felt that *there* must be the abode of refinement, contentment, and peace?

Time was when the setting of shade trees by the road-side was forbidden by law, lest, in case of fires in a village, they should be the means of spreading the conflagration from dwelling to dwelling; but, thanks to a wiser and more far-seeing legislation, their cultivation is now encouraged by statute, and their wilful and malicious destruction is visited with a heavy penalty.

A wealthy inhabitant of Middlesex recently left a legacy of several hundred dollars for planting trees by the road-side. What future wayfarer, as he seeks rest and shelter under their welcome shade, will not pronounce blessings on this benefactor of his race? A public-spirited member of our own society* has, directly or indirectly, caused several hundred trees to be transplanted along the highways, within a few years past; and already his example is imitated by many who were first inclined to oppose or ridicule. Let us, then, encourage the cultivation of ornamental trees, remembering that, in their happy influences upon our posterity, they will bear fruit, "some thirty, some sixty, and some an hundred fold."

This society have offered, for the greatest number of ornamental trees of the best kind, and in the most thrifty condition, planted by the road-side, a premium of $10; for the second best, $5. The committee award to Lucas Daggett of Attleborough, being the only competitor, a premium of $5.

The cultivation of forest trees also demands our attention, and is worthy of our serious efforts. Modern civilization is fast sweeping away the beauty and pride of those noble forests which waved so majestically over our land when the Mayflower touched our New England shores. The murderous axe of the Yankee farmer has made wanton havoc of our noble pines and stately oaks; the work of destruction is still going on; and necessity will soon compel us to adopt some energetic measures for the preservation of so valuable a production of our soil.

The beauty and usefulness of the forest are each sufficient reasons for cherishing and preserving it.

How much more pleasant to the eye is a hill-side, with its green trees and splendid foliage, to a naked, barren summit,

* Mr. Samuel Carpenter, of Attleborough.

stript of nature's own protection? Who would exchange the tree-clad hills of Berkshire for the uninteresting wastes of Nantucket? The lover of nature, too, finds unwearied delight in gazing upon our autumnal forests. Their exceeding variety and brilliancy have been the subject of enthusiastic admiration of every English traveller. The gold and green of the American elm, the high orange hues of the sugar maple, the gold and scarlet of the swamp maple, the unassuming buffs and yellows of the birches, the full bright yellows and scarlets of the oaks, the rich browns of the bass-wood and hickories, the soft olive tints of the ash, the ochry hues of the larch, the deep black green of the firs and other evergreens; all these intermingled and combined with brilliant tints of crimson, purple, and gold, in a thousand forms and shades, ever changing to the eye of the traveller, like nature's great kaleidoscope, present a sight which in gorgeous beauty outrivals the most brilliant conceptions of imperial magnificence.

Well, then, does the American forest deserve preservation for its magnificent beauty alone. But we are a utilitarian people, and require some more powerful stimulus to stay the devastation of our forest trees, which our want of foresight is so rapidly producing. The uses of the forest are so manifold and multiform, that our economical interest requires us to adopt some means for its preservation.

We have time to enumerate only a few of the prominent points of value and necessity. Forests enrich our soil by their annual deposits of leaves and branches. Their roots and rootlets permeate the ground, opening it to the genial influences of the sun, rain and air, while on the hill-sides they bind it to the earth, preserving it from wearing and washing away under heavy rains and snows. They equalize the temperature of the climate; protecting us, our flocks and herds, from the violence of the winds and the scorching rays of an American sun. They furnish us with building material for our dwellings, our shops and stores, our ships and steamers; for our cabinet ware, carriages, wooden ware, fences, and agricultural implements. To say nothing of the cultivation of certain varieties of trees for the value of their barks and nuts, the sugar maple recommends itself to us as a source of easy and enormous profit. It has been stated, that a single town in our Commonwealth has

produced in a year over a hundred thousand pounds of sugar from this tree; and the annual production of a single New England State, containing not one-third the population of our own, has exceeded five million pounds, which, at the average price at retail among us, amounts to a sum nearly sufficient to defray the annual expenses of the whole judiciary, executive, and legislative departments of our own Commonwealth.

Last, but not least, we would mention the forest as a source of fuel. To pass over the thousands of cords consumed annually by the various railroads and steamboats, if the average supply of fuel for each family in the Commonwealth were but ten cords a year, and there be a hundred and fifty thousand families in the State, our annual fuel for family use alone is purchased at a cost of over $7,000,000. And this does not include the vast quantities used on railroads and for manufacturing purposes, nor the thousands of tons of coal which are annually imported and sold within our borders.

We have not time to pursue this investigation further; but enough has been given to demonstrate that the value of our forest trees is far beyond our ordinary estimation or conception.

In view of these facts, and because of the rapidity with which our woods are disappearing, this society has offered premiums for the most extensive forest of any sort of trees, suitable for fuel or timber, and in the most flourishing condition in September, 1851.

The committee are gratified to see the spirit beginning to be awakened among our farmers on this subject, and that the prejudice once existing against planting trees is fast disappearing.

Many have commenced planting pines on barren, worn out land; and already their fields have advanced more than five hundred per cent. in value.

The committee have examined several handsome fields of pine in this part of the county, and award the first premium of $25 dollars to John B. Newcomb, of Norton.

The second, of $20, they award to J. Calvin Crane, of Norton. The committee also award the same premium of $20 to Samuel Carpenter, of Attleborough, for the greatest number of forest trees to the acre.

The third, of $15, to Darwin Deane, of Mansfield.

The committee have also viewed with great pleasure the pine woods of Henry T. Gilmore, of Raynham, and James Smith, of Norton; but as they are not strictly within the regulations prescribed by this society for competitors for premiums, your committee cannot award them a premium, but deem them equitably entitled to a gratuity of $10 each.

The present regulations require, that the number of trees shall be not less than a thousand to the acre. At this rate, the trees must stand not far from six feet apart. Believing that they can be raised more profitably, if more thinly planted, your committee recommend that the future premiums shall be offered to the person setting out the greatest number of acres after this date, to be not less than three hundred to the acre.

Edmund H. Bennett, *Chairman.*

Heavy Manufactures.

[The committee on heavy manufactures awarded about fifty premiums for different articles.]

Domestic Manufactures.

The committee on domestic manufactures have great satisfaction in announcing, that 164 articles, principally from the never-tiring hands of the gentler sex, were entered this year for exhibition, all of which gave evidence of the ingenuity, skill, and industry, which are characteristic of all New England ladies. The committee would have been happy to have classified, described, and mentioned in detail, these articles, many of them eminently worthy of particular notice; but the time would not allow us to perform this pleasant task, and we are obliged to submit the report in its present brief form, merely noticing a few articles of prominent interest.

The committee avail themselves of this opportunity to acknowledge their great indebtedness to those ladies who kindly

consented to assist in the examination of the articles offered for premium, and to whose better taste and judgment they were happy to defer in all cases, especially when the articles in question were the products of the fairy-fingers of their own sex.

[This committee awarded over one hundred premiums.]

Fat Cattle, Horses, and Steers.

The committee on fat cattle, horses, and steers, have, with all the care which their limited time and the situation of the animals would allow, examined the several animals which were presented to them for premiums, and now submit to the society the result of their deliberations.

The committee regret that the number of fat cattle was less than upon some former occasions. But it is not remarkable that some one of the numerous departments in which the exhibition is divided should occasionally suffer a diminution, while the general prosperity of the society is rapidly increasing, and almost every other department exhibits a remarkable increase. Having maturely considered the claims of the several contributors, the committee have awarded the following premiums, viz.: on

Fat Oxen.

For the best ox—

1.	P. E. Williams, for the nigh-ox of his pair, .	$10 00
2.	Elbridge G. Hunt, off-ox, ...	8 00
3.	James Austen, nigh-ox, ...	6 00
4.	Daniel Wilbur, "	5 00
5.	P. E. Williams, off-ox, ...	4 00

The committee regret that candor hath compelled them to mention the falling off from the last exhibition in steers, both in number and quality, is greater than that of fat cattle. We are aware that other pursuits, manufacturing, mercantile, navigating, and mechanic, seem to promise greater pecuniary returns than agricultural; and to this cause must be imparted the inattention to the oldest, the most healthful, the most honorable of all occupations,—the cultivation of the earth. And,

while we rejoice at the remarkable advance of our manufactures and the high eminence which they have attained in our exhibitions, we take no pleasure in seeing them outstrip the products of the farm. We would gladly see the latter equal, if not surpass, the former; but this we desire to see accomplished, not by diminishing the excellence of the manufactures, but by improving and perfecting the cultivation of the earth.

From the exhibition now made by one branch of agriculture, we derive great assurance that other and more important branches will be stimulated to greater efforts, and of course to greater advancement. However brilliant the exhibition of mechanic and manufacturing skill and taste, the show made by the horticultural department is not a whit behind it; and, were the subject referred to our committee, we are by no means sure that we should not be *tempted* to prefer the latter. And we hope it will not be long before the farmer, in the raising of crops of grain, crops of hay, and oxen, cows, and steers, will surpass the products of all other branches of industry. This hope is greatly strengthened from the fact that in no one branch of industry has so great improvement been made, as in the training and management of teams; and, from the high excellence of the draft animals and the extraordinary skill of the ploughmen, we necessarily infer that increased improvement will extend to every other branch of agricultural industry. Good oxen and good horses cannot be produced without good steers and good colts. And we trust that another anniversary will not occur when premiums are returned to the treasury because no proper animals are offered to take them.

Of two-year old steers, only two pairs were offered, and the committee were of opinion that only one of these was entitled to a premium, and they accordingly award to Henry Dean a premium of $4.

Of yearling steers, only one pair was offered; and to their owner, A. B. Codding, we award a premium of $3.

From the meagre catalogue of neat cattle, we turn with great satisfaction to that noble animal, the horse. Quite recently the attention of the farmers of this county has been excited and directed to the rearing of colts and the improvement of the breed of horses. Until one year ago, no exhibi-

tion of animals of this kind worthy of notice was ever made. At our last anniversary, twenty fine animals were entered. On the present occasion, there has been an increase in number and quality.

Horses.

For the best horse over three years old—

1. C. Whitman,	$8 00
2. A. J. Pease,	6 00

For the best horse, not over three years old—

1. Elkanah Pierce,	6 00
2. Henry H. Crane,	5 00
3. Benjamin W. Miller,	4 00

For the best horse, not over two years old—

1. E. W. Cain,	5 00
2. E. Williams,	4 00
3. J. Brayton,	3 00

The committee also, in consideration of the number and excellence of the animals presented, and the paucity and smallness of the premiums offered, ask leave to recommend to the society to grant the following gratuities, viz.:—

Marcus M. Rounseville, for a beautiful little bay mare, just over three years old,	$3 00
Jonathan Barney,	2 00
Lloyd Wilbor,	2 00
J. B. Chase, for colt three months old,	1 00
Billings Waldron, for colt four months old,	1 00
Josiah Woodward, " " "	1 00
Ambrose W. Hathaway, for colt one year old,	1 00

All which is respectfully submitted.

Marcus Morton, *Chairman.*

Breeding Stock.

The committee to whom was assigned the duty of examining breeding stock and awarding premiums thereon, beg leave to submit the following report:—

Bulls.

1. J. H. W. Page, New Bedford,	$15 00
2. Zenas B. Carpenter, Attleborough,	10 00
3. G. W. Davis, Taunton,	8 00
4. Job Dean, Raynham,	5 00

Bull Calves.

1. Ezra P. Short, Swanzey,	6 00
2. Micah H. Ruggles, Fall River,	4 00
3. James Dickerman, Easton,	2 00

They would also recommend the allowance of the following gratuities:—

Asa Shove, Berkley, fine bull calf,	$1 00
Timothy G. Coffin, New Bedford, do.,	1 00

Had the latter animal been entered, he would have taken the third premium.

Cows.

1. Thomas Murphy, Taunton,	$12 00
2. Seth D. Hall, Raynham,	10 00
3. Soranus Hall,	8 00
4. Hiram Waldron, Taunton,	5 00

Heifers.

1. Elisha Hodges, Mansfield,	5 00
2. Ebenezer Padelford, Taunton,	4 00
3. Thomas Murphy,	3 00
4. Micah H. Ruggles, Fall River,	2 00

They would also recommend the allowance of the following gratuities:—

Asa Shove, Berkley, for a fine heifer and calf,	$2 00
Barnum Hall, Raynham, for a pair of fine twin heifers,	2 00
Preston M. George, Attleborough, for a fine heifer, sired by the county bull,	1 00
Leonidas Dean, Raynham, for a fine heifer; Micah H. Ruggles, Fall River, do.; Jonathan Richmond, Taunton, do.; Billings Waldron, Dighton, do.; George Padelford, Taunton, do.; Leonard Hodges, Norton, do.; Warren Lincoln, Raynham, do.; each	1 00

Heifer Calves.

1. Joseph L. Macomber, Taunton, ...	$5 00
2. Soranus Hall, Raynham, ...	3 00
3. J. S. King, Raynham	2 00

The committee express the opinion that the exhibition will favorably compare in this department with any of the preceding years, particularly in that of heifers; hence the liberal recommendation to allow gratuities to that kind of stock. There were so many fine ones presented that the committee were somewhat embarrassed in making a just discrimination. While they feel unwilling to make any invidious distinction among the many fine animals offered for exhibition, they would call the attention of the society to a fine cow, four years old last May, of the pure Durham breed, presented by Mr. Thomas Murphy, of Taunton, which gave two hundred quarts of milk during ten days of June, from which was made thirty pounds of butter. Also, during the same time in September, she gave a hundred and fifty quarts, from which was made twenty-two and a half pounds of butter. This class of stock, however, on a whole, would not compare with either of the others in numbers or quality; but the committee express the opinion, that, if the fine heifers offered are retained within the county, coming years will amply redeem any deficiency that may exist this year. And they would further remark, that the many fine bulls and bull-calves exhibited, afford an almost sure guarantee, that, in breeding stock, this society, if it does not now, will soon equal in that respect any of her sister associations in this Commonwealth.

All which is respectfully submitted.

For the committee,

C. A. Church, *Chairman.*

Sheep and Swine.

Sheep.

The whole number of sheep entered and presented for premium was twenty-two, viz.: eighteen ewes and four bucks.

The quality of the animals was very satisfactory, and your committee had no difficulty in arriving at the result of their opinions as to their relative merit. They award premiums as follows, viz.:—

Bucks.

1. G. Lawton, Freetown, pure South Down, . .	$4 00
2. J. E. King, Taunton, half Leicester and half native,	3 00
3. E. J. Sandford, Rehoboth, half Beckwith and half native, ...	2 00

Ewes.

1. Job G. Lawton, Freetown, six ewes, . . .	4 00
2. Jacob Shepherd, Norton, " " . . .	3 00
3. E. J. Sandford, Rehoboth, " " . . .	2 00

And the committee recommend a gratuity to

Laban Lincoln, of Norton, for a buck, of . . 2 00

Swine.

The whole number of swine entered was sixteen, viz.: six boars, nine sows, and one barrow; and they were all, either in whole or in part, of the Suffolk breed, with the good qualities of which your committee, from what they have seen and heard, are very favorably impressed.

The committee award the following premiums:—

Boars.

1. Edward P. Haskell, of New Bedford, for a very handsome Suffolk, ...	$5 00
2. Hiram J. Hunt, Norton, for a Suffolk, . . .	4 00
3. James Dickerman, of Easton, ...	3 00

Sows.

1. Ephraim Allen, of Norton, Suffolk breed, . .	5 00
2. Edward P. Haskell, of New Bedford, do., . .	4 00
3. James Dickerman, of Easton, do., . . .	3 00

The committee recommend a gratuity to—

Tamerlane Burt, of Berkley, for three pigs, of . . 2 00

The committee desire to express their gratification at the excellent quality, both of the sheep and the swine presented; but they regret that the number was not greater. The number

of sheep in the county is not very large; but the committee are of opinion that their brother farmers may profitably raise a small number, at least, upon every farm in the county.

Swine are found upon every farm, and almost with every family. Pork is essential to the comfort of all our people. Considering the importance of the article, two things are matters of surprise. First, that so little regard is paid to the qualities of the hogs that our farmers raise. Every *hog* is a *hog;* but every hog is not a *good*, or a *cheap*, or a *profitable* hog. Some cost double to keep that others do. As a matter of economy, it is important for the farmer to get and keep the best. The committee, from the best knowledge and information which they have on the subject, are very favorably impressed with the Suffolk breed of hogs, and recommend them to the attention of all persons who keep swine.

The second matter of surprise is, that, from the great multitude of swine in the county, so few are exhibited at the show. Your committee express the hope, that at all future exhibitions a much greater number of this interesting class of animals will claim the attention of the committee who shall be honored by the society with the duty of reporting upon their merits.

All which is respectfully submitted.

For the committee,

PHILIP T. DAVIS, *Chairman.*

POULTRY.

The committee on poultry have attended to the duty assigned them, and would make the following report:—

Fowls.

For the best lot of Shanghae fowls—

1. Edwin Howard, Easton, ...	$2 00
2. A. Briggs, Mansfield, ...	1 50
3. Philander Williams, Raynham, . . .	1 00

Turkeys.

For the best and only lot of turkeys—

B. G. Hathaway, Berkley, ...	2 00

Geese.

For the best lot of geese—

1. Job Dean, Raynham,	$2 00
2. Ethan Howard, Raynham,	1 50

Ducks.

For the best lot of ducks—

1. Ethan Howard, Raynham,	2 00
2. A. Briggs, Mansfield,	1 50

Your committee would also recommend the following gratuities:—

A. Briggs, Mansfield,	$1 00
N. R. Richardson, Berkley, eight black Spanish fowls,	1 00
F. M. Hall, Taunton, six Shanghae fowls,	75
Eli K. Robins, Taunton, four coops of do.,	75
Lewis L. Reed, Seekonk, five "Plymouth Rocks,"	50
D. A. Weston, Taunton, two varieties,	50
Zopher Dickerman, Easton, four Bantams,	50

PLOUGHING WITH OXEN.

The committee on ploughing with oxen submit the following report:

The whole number of teams which were entered for the premiums was fifteen. Although, in the opinion of the committee, the ploughing was throughout, more nearly of uniform excellence than it has been, yet upon the principles adopted by the committee, and announced to the contestants at the opening, we have decided with entire unanimity upon the following list of premiums:—

1. John A. Hall, of Raynham,	$8 00
2. Elisha Williams, of Taunton,	7 00
3. John B. Newcomb, of Norton,	6 00
4. Seneca Lincoln, " "	5 00
5. Samuel A. Dean, of Taunton,	4 00
6. Jacob Dean, of Mansfield,	3 00
7. Samuel W. Robinson, of Taunton,	2 00

Your committee also recommend a gratuity of $1 for excellent ploughing, to Jonathan Richmond, of Taunton.

NATHANIEL MORTON, *Chairman.*

PLOUGHING WITH HORSES AND STEERS.

The committee on ploughing with horses and steers, have attended to the duty assigned them, and are unanimous in the following report, viz.:—

With two Yokes of Steers, or with one Yoke and Horse, with Driver.

1. Elijah E. Williams, Raynham,	$5 00
2. Henry Southworth, Taunton,	4 00
3. Wilber & King, Raynham,	3 00
4. Carmi Andrews, "	2 00

Gratuities.

Woodward & Williams, Taunton, gratuity of	2 00
William L. Woodward, " "	2 00
Artemas Leonard, Raynham,	1 00

With one Pair of Horses—no Driver.

1. H. M. Barrows, Norton,	5 00
2. David Arnold, "	4 00
3. Henry N. Harvey, Taunton,	3 00
4. Samuel W. Robinson "	2 00

Gratuities.

J. H. Fairbanks, Taunton, gratuity of	2 00
H. C. Perry, Norton, "	2 00
Andrew H. Hall, Taunton, "	1 00
Woodward & Williams, "	1 00

Respectfully submitted.

For the committee,

F. B. DEAN, *Chairman.*

WORKING CATTLE.

The committee on working cattle have attended to their duties, and beg leave to make the following report:—

There were seventeen pairs of oxen and four pairs of steers entered; but one pair of oxen was withdrawn during the trial, and but sixteen pairs competed for the premiums. The load drawn by the oxen weighed six thousand three hundred pounds, and that by the steers, four thousand five hundred pounds, including the weight of the wagons. These loads were by no means heavy, either for steers or oxen; and the ease with which many of the teams drew, turned, and backed the loads, was admirable.

It is not easy to determine the exact relative merit of so many teams, especially where there was often so little real difference, and particularly where the dissimilar points of excellence rendered comparison very difficult. And, even then, the different value set on some points by good judges may justify us if we differ in opinion from many of that large number of persons that saw the work, and even if we did not wholly agree among ourselves.

We have awarded the prizes offered by the society, as follows:—

For Working Oxen.

1. Leonard L. Short, Taunton,	$10 00
2. Warren Adams, Norton,	8 00
3. John B. Newcomb, "	7 00
4. Daniel Wilbur, Somerset,	6 00
5. Barnum Hall, Raynham,	5 00
6. Benjamin Sweet, Norton,	4 00
7. Henry D. Deane, Mansfield,	3 00
8. Stillman Wilbur, Raynham,	2 00
9. Samuel W. Robinson, Taunton,	1 00

And we recommend a gratuity of $1, for an excellent pair of oxen, to Capt. Samuel Cain, Taunton.

For Steers.

1. William L. Woodward, Taunton,	$4 00
2. Otis R. King, Raynham,	3 00
3. Elijah E. Williams, Taunton,	2 00
4. Henry Southworth "	1 00

There were two pairs of oxen on the ground, of very great strength; and one pair of them was far the largest, and, for some purposes, the finest of all. This pair belonged to William

L. Slade, of Somerset. They weighed three thousand seven hundred pounds, and were of fine blood and figure, and show the qualities that may be produced by careful breeding. Another fine pair belonged to Laban M. Wheaton, of Norton, very large and strong, and ornaments to the ground. Neither of these pairs of oxen could be very well complimented by prizes according to their deserts, in the scheme proposed for our guidance.

Your committee are not certain that some prizes should not be offered for good drivers, as well as for good driven oxen. If so, some of those who competed would certainly succeed; for work was effected by them quietly, without noise or the use of the whip, and in as handsome a manner as it was possible to exhibit. The labor of oxen is one of the fundamental reliances of the community, and must be improved with great care. It has been discussed from the time when Virgil gave directions how to break steers, *dum nobilis ætas*, to those who in these days have gone deeply into the mysteries of breeding. But our oxen are yet capable of very great improvement. They are in most cases bought out of droves from the country; and, though they show great skill in training and excellent keeping, they rarely exhibit what we should like to see,—the product of skilful breeding. We expect before many years to see our farmers exhibiting cattle of faultless forms and perfect growth, exactly fit for the yoke, and of their own raising.

For the committee,

C. B. Farnsworth, *Chairman.*

BARNSTABLE AGRICULTURAL SOCIETY.

The annual cattle show and fair by this society, was held at Sandwich, on Wednesday, 13th day of October last.

The number of cattle exhibited was less than might have been shown by the farmers of the county; which may, in part, be accounted for by the place of the exhibition being on the extreme border of the county, and from a heavy rain on the morning of the exhibition, which prevented the farmers of the neighboring towns from driving their stock to the place of exhibition.

The specimens of fruit on exhibition, although not large, were of a superior quality, and would do credit to any kindred association in the Commonwealth.

The exhibition of fancy articles displayed much good taste, and was highly creditable to the fair contributors.

The Address before the society was delivered by Simon Brown, Esq., of Concord.

Farms, Grain, Crops, &c.

The executive committee being the committee to award premiums on the management of farms, manure, improving wet meadow or swamp lands, irrigation or flowing, and grain or field crops, have attended to the duty assigned to them, and have awarded the following premiums:

To Simeon Dillingham, of Sandwich, for hay from land heretofore unproductive, brought in by cultivation, the first premium of $5.

Simeon Dillingham's Statement.

The hay grown upon land heretofore unproductive, to which I invite the attention of the committee, was grown upon one

acre and ninety-seven rods of land, a part of a lot containing eight acres, which previous to 1848 did not afford sufficient pasturage for two head of cattle more than three months. In the fall of 1848, I cut off the bushes with which about one-half was covered, and dug the rocks from the surface; the following spring applied a dressing of manure, about sixteen loads to the acre, and ploughed to the depth of six inches, and in the fall harvested twenty-five bushels of corn to the acre. In the spring of 1850 cleared off the stubble and harrowed it well (did not plough) and sowed one-half with barley and the remainder with oats; after sowing the grain, applied ten loads of manure. In 1851 I sold the grass to T. Holmes, of North Sandwich, who cut four and a half tons of hay, clover and timothy. In September I cut from one-half of it three-fourths of a ton, by estimation, of second growth; in November dressed again that part which was mowed twice, with stable manure, say six loads to the acre. The past season I cut three tons of hay of good quality.

I ought to add that this piece of ground had not been broken up for forty-five years, to my knowledge, and how much longer am not able to say. It is what is called high land, and the soil is principally a clayey loam.

Sandwich, Oct. 13, 1852.

To Samuel Childs, of Barnstable, for improving wet meadow or swamp lands, we have awarded the first premium of	$6 00
To Melatiah Bourne, of Sandwich, for the best conducted experiment of Indian corn, on not less than one acre of land, the first premium of	6 00
To Prince Tupper, of Sandwich, second premium of	4 00
To J. B. Dillingham, of Sandwich, for best conducted experiments on the cultivation of rye, on one acre of land, first premium, . .	4 00
To Naaman Dillingham, of Sandwich, for the best experiments in the cultivation of barley, first premium, ...	2 00

To Samuel Childs, of Barnstable, the first premium on oats, ... $3 00

To James B. Crocker, of Yarmouth, for the best conducted experiment on the cultivation of white beans, the first premium of . . . 3 00

NAAMAN DILLINGHAM,
Chairman of Executive Committee.

BARNSTABLE, Nov. 26, 1852.

Melatiah Bourne's Statement.

I present, for the committee's consideration, the following statement of the yield of an acre of land belonging to my farm, situated in the precincts of the village of Sandwich.

The land consists of a light, friable loam; it was planted with corn last year, and is usually kept in good condition. In April last, thirty loads of barn-manure were spread on the land, and it was ploughed to the depth of eight inches. The expense of cultivation and profit received may be thus stated:

To 30 loads of barn-manure, . . .	$30 00
To carting and spreading, . . .	3 00
To ploughing and harrowing, . . .	3 50
To planting and seed, ...	1 50
To hoeing four times, ...	6 00
To cutting and harvesting, . . .	6 00
To interest on land at $100 per acre, . .	6 00
	$56 00

CREDIT.

By 70 bushels 3 pecks of merchantable corn, at $1 per bushel, . . .	$70 75	
By fodder, ...	10 00	
By pumpkins, ...	5 00	
By one-quarter manure back, . .	7 50	
		93 25
Net gain, ...		$37 25

SANDWICH, Nov. 15, 1852.

Naaman Dillingham's Statement.

The barley which I offer for premium was raised on ninety rods of land. The soil a light loam. It was planted with corn and potatoes last year, with a good dressing of barnyard manure. Last spring spread five loads of compost manure, and ploughed in. Sowed one and a half bushels of barley on the 23d day of April, and harrowed it in. The product was twenty bushels. It is a good substitute for corn, in fattening poultry and pork.

To interest on land and taxes, . . .	$6 50
To ploughing, sowing and harvesting, . .	2 50
To four-fifths of five loads of manure, . .	4 00
To mowing, raking and threshing, . .	3 50
To one and a half bushels of barley, at 80 cents,	1 20
	$17 70

CREDIT.

By twenty bushels of barley, at 80 cents, .	$16 00
By three-fourths ton for packing glass, at eight dollars per ton, ...	6 00
	$22 00

Sandwich, Oct. 13, 1852.

James B. Crocker's Statement.

The beans on which I claim a premium were grown on a piece of land measuring seventy-one rods. The soil is a light loam, and the land valued at fifty dollars. Corn was raised on the land last year. Early in June last, six loads of manure was spread on the land, and ploughed in and harrowed. The beans were then planted in hills fifteen inches apart. They received only one hoeing; at the time of the second, they were so thick as to prevent hoeing without injury to the vines. The beans were harvested in the latter part of September, and the product was twelve bushels in measure, weighing sixty-five pounds to the bushel, making 13 bushels at 60 pounds to the bushel.

Value of twelve bushels at $2 25,		$27 00
EXPENSES.		
Ploughing and harrowing,	$2 00	
Six loads of manure at 50 cts.,	3 00	
One bushel of beans for seed,	2 25	
Planting, $2; hoeing, $2 50,	4 50	
Harvesting and threshing,	2 25	
Winnowing and measuring,	75	
Interest and taxes,	3 25	
		$18 00
Net profit,		$9 00

YARMOUTH, Oct. 9, 1852.

The undersigned, a committee to award premiums of forest trees, and the cultivation of cranberries, have attended to the duty assigned to them, and have awarded the following premiums, viz.:

To Lewis Hamblin, of Barnstable, for the best plantation of forest trees, the first premium of $6 00

To Alvan Cahoon, of Harwich, for the best experiment in the cultivation of the cranberry, the first premium of 5 00

NAAMAN DILLINGHAM, *Chairman.*

BARNSTABLE, Nov. 26, 1852.

Lewis Hamblin's Statement.

I offer, for the consideration of the committee on the above subject, two acres of pitch-pine trees. These trees are over one year and not more than three years old; standing not less than five hundred trees to the acre, and were all raised from seed planted by myself. I have several acres more of larger growth than that required by the rules of the society, which I had planted at an earlier day. The land on which these trees are planted, was worth at the time nothing for tillage, and very little for pasturage. Its value could not exceed two dollars per acre. The expense of planting is all comprehended

in mere labor; and, except the value of land, the present plantation is wholly the result of labor. I gather the seed of the pine from trees in October, extracting it from the cones at leisure moments during the winter, and plant in April.

My mode of planting has been to make holes with a common hoe, about four feet apart, without ploughing; the earth being loosened for each hill about one foot square. The seeds are then planted by hand, about half an inch deep, say two or three seeds in a hill. Nothing is done afterwards in the way of cultivation, but the plants take care of themselves. They attain only a height of about one inch the first year, and grow more rapidly every succeeding year. According to my experience, pines do better in a loamy soil than one that is sandy.

Sheep and Swine.

[The committee on sheep and swine, after having glanced at many circumstances connected with the past history of that valuable animal, the sheep, conclude their able report as follows:]

With these "backward looking thoughts," we come to consider the only question of practical significance which really belongs to this occasion, whether the culture of sheep at this day, in this county, is deserving of encouragement? And to this we certainly are inclined to reply affirmatively.

In the first place, there is a large proportional quantity of land in our county, suited to the purposes of pasturage, and of raising the necessary crops for winter sustenance. By far the largest portion of the farming land of the Cape is of the character said to be best suited to the production of the best quality of wool. It has been ascertained that fleeces grown on argillaceous soils, or soils on which clay enters as an ingredient, are much softer, and better in other respects, than those raised on calcareous soils, or those intermixed with lime in its various states. Thus the Leicester sheep, of England, which shear the long, combing fleece, thrive better in the northern counties, while the South Downs, which "crop the grass that grows on the thin soils over beds of chalk in Wiltshire, Hampshire and

Dorsetshire," are among the short-woolled varieties. Although our exposed situation might be favorable to the introduction of the better breeds of sheep—unless extraordinary care were taken in their management—it is obvious that there are considerable tracts of our soil that are not unfitted to the purpose of producing the higher grades of wool. And when we consider, as we shall presently, how far even the more common varieties of sheep may be improved by culture, it will be sufficient for us to know that with proper attention, great advances may be made here in the economy of sheep culture. In the next place we have sufficient quantities of land for the production of the various root crops, which are employed to advantage in winter feeding; and of these the turnip crop may be ranked as the chief. Our most meagre soils, with small labor, will afford large returns of this esculent. In Great Britain immense quantities of turnips are raised on what were formerly denominated fallow lands, and "now land in turnips is considered as fallow." "It is not uncommon to see these fields of three, four, and even of five hundred acres, of this crop. These vegetables are used for the feeding of animals, and to a great extent of sheep. Since the introduction of the culture, bullocks and sheep have trebled in number;" and the present produce of wool there, may be set down as far above fifty millions of fleeces per annum. There is no reason why these magnificent results may not be reproduced, on a smaller scale, among us. It is not, perhaps, to be expected that here the more costly kinds of wool can be produced from the fancy varieties of sheep, although we apprehend that the South Downs would thrive well upon our soil. We should prefer to recommend the proper and skilful management of our common races. It is undoubtedly true that very much may be done in enhancing the value of these by judicious culture.

"Naturalists say that the ancestors of the present improved breeds of sheep, were animals vastly different from what they are at present. The Liberian argali, or wild sheep, is about the size of the fallow deer, and yet from this unpromising orgin have come the races of sheep found at the present day—and this change has been produced by culture. It is said that fine fleeced sheep have always been most abundant in the immediate neighborhood of civilized manufacturing countries, indicat-

ing that cultivation has produced the heavy coverings not found in the wild state of these animals. In the barbarous period following the decline of Rome, a cessation of manufactures led to the depreciation of the fleeces of that day, and instead of those coats, famous in history, the sheep wore wretched coverings, unfit to clothe a beggar."

From facts such as these, we educe the position, that by culture the fleece can be improved not only in quality qut in quantity. It has been satisfactorily demonstrated that there is no difficulty in producing five, six or seven pounds of wool to the fleece. There can be no doubt that one pound of wool may be raised for every ten or twelve pounds of careass; and one farmer in Vermont, we are told, has succeeded in shearing one pound of wool to every seven or eight pounds of carcass. The average clip of the Leicesters of England is set down at seven or eight pounds to the fleece, and that of the South Downs at three and a half or four pounds. These great advances upon the ordinary yields have all been attained by judicious husbandry, the details of which would lead us into too wide a range for this occasion.

Having said thus much in reference to one branch of our duty, we turn to bestow a few words on the long neglected race of swine. So much has heretofore been said, and well said, on this fruitful topic, that it has been well nigh exhausted. The whole vocabulary of our language has been ransacked to find terms in which to exhibit this humble beast; and every possible witticism has been made at his expense. To attempt anything in that line would be "wasteful, ridiculous excess." We should have another chapter of "twice told tales." We prefer to offer a few brief words, of a more serious character.

We can but repeat here our regret that so few specimens of the swinish races should have been exhibited. Considering that this animal is one of such general utility, whose rearing is thought indispensable by nearly every family in the county, it is certainly surprising that no greater competition has been manifested for the prizes offered by our society. It is evident that there is very little of interest felt in the improvement of the various species of swine. Our people trust to the chances offered by drovers to obtain some sort of a pig, caring very

slightly what may have been his "antecedents," and then they make the most of him.

Now this is not the course required by good economy. This animal, like that we previously considered, though descended from a vulgar ancestry, may be greatly ennobled by careful management. The hog, which appears to be indigenous to all the temperate climates of the Old World, was not found upon the western continent previous to its introduction by the Spaniards. The black breed brought over by them has rapidly increased upon the islands and main lands of our continent. The European wild boar, the parent of the English domestic breeds, and probably of all others extant, still exists in the forests of Germany, where he is preserved for the purposes of game, as deer are in English parks. He is described as a dark, brindled, gray color, nearly black, with "longitudinal stripes like those of the corderay pigs." He certainly must have been the progenitor of the "Dedham Striped Pig."

In addition to the ordinary uses to which swine are devoted, to eat, and sleep, and die, and be subjected to all sorts of fiery torments afterwards, they have been made serviceable in other ways in some countries.

In one part of England they are occasionally employed to draw the plough, and it is said that on the Island of Minorca, a hog and an ass are often seen yoked together. In this country their ploughing, we apprehend, is done by a process of subsoiling entirely their own, and whatever of yoking they are subjected to, is intended not so much to apply them to useful purposes as to keep them from committing mischief.

Though swine have been written down as a stupid, unmannerly, filthy family, we are convinced they are capable of a higher destiny. The short period of their existence is probably the greatest cause of their defective education. Truly their life is but a summer day. Through a few briĕf months they "scrawl strange tracks in a barbarous pen," and then are sacrificed to the appetites of those who, in feeding them for the slaughter, have killed them with kindness.

With such means for their culture, how could we expect much of them? We are told, however, that a gentleman in England actually succeeded in making a hog perform all of

the acts of a pointer dog with great fidelity. And yet, with the capacities that such an achievement requires, we fear they are ever doomed to be an oppressed and neglected race. We have aimed to be just to their merits in this very brief and trifling tribute, and now dismiss them kindly from our thoughts.

We award premiums as follows:

To Joseph Bodfish, of Barnstable, for the best buck, the first premium of	$3 00
To Charles H. Bursley, of Barnstable, for the next best, second premium of	2 00
To Joseph Bodfish, of Barnstable, for the best lot of ewes, first premium of . . .	3 00
To Isaac P. Lawrence, of Sandwich, for the next best, second premium of	2 00
To Isaac P. Lawrence, of Sandwich, for the best lot of weaned pigs, ...	5 00
To Perry Lapham, of Sandwich, for the best boar, first premium of	3 00

For the committee,

Geo. Marston, *Chairman.*

Abstract Showing for what Object Premiums were Offered and Awarded, and the amounts of the same.

SOCIETIES.	Bulls.		Milch Cows.		Heifers.		Working Oxen.		Steers.		Fat Cattle.		Horses and Colts.		Sheep.		Swine.		Poultry.		Greatest No. of pairs of work'g oxen from any Town.	
	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.
Barnstable,	$15	$14	$15	$	$8	$8	$6	$6	$17	$9	$16	$9	$32	$19	$10	$10	$23	$8	$2½	$1½	$	$
Berkshire,	24	24	54	54	26	26	54	54	46	36	15	11	64	75	66	58	26	16	10	10	20	20
Bristol,	50	52	35	35	24	36	46	47	10	17	33	33	41	52	18	20	24	26	18	18½	–	–
Essex,	28	18	34	24	39	34	28	28	30	29	23	23	68	54	11	11	27	25	20	15	30	20
Franklin,	25	25	28	12	6½	6½	25	29	25	35	31	35	57½	56½	32	36	27	18	4	2½	30	25
Hampden,	30	19	35	35	12	15	57	58	31	31	60	55	67½	65½	24	16	42	36	7½	8	46	36
Hampshire, Franklin, and Hampden,	20	24	26	26	13	13	35	35	19	19	25	–	91	96	9	8	16	16	33	34¾	45	–
Hampshire,	13	13	19	10	7	4	18	19	30	30	12	12	38	41	9	8	19	16	6½	4	45	45
Housatonic,	22	26	36	38	30	28	54	54	40	40	13	13	54	64	61	57	23	26	7	6	–	–
Middlesex,	49	48	48	39	30	32	20	20	17	9	18	18	25	9	–	–	17	18	15	16	–	–
Norfolk,	50	43	76	18	47	48	22	11	21	17	16	16	50	32	8	–	51	41	41	28	45	–
Plymouth,	13	13	16	16	19	21	16	16	18	15	35	35	–	17	–	–	20	27	20	19¾	–	–
Worcester,	43	41	100	59	61	61	43	43	63	63	55	55	–	–	14	7	52	46	23	18	–	–
Worcester West,	39	36	32	18	28	28	37	35	32	27	45	27	39	42	10	12	37	32	13	9	10	–
	421	396	554	384	350½	360½	461	455	399	377	397	342	627	623	292	243	404	350	220½	190¾	272	146

PREMIUMS—Continued.

SOCIETIES.	Ploughing with Oxen.		Ploughing with Horses.		Ploughing with Oxen or Horses.		Effects of subsoil Ploughing.		Managem't of Farms.		Gardens.		Reclaiming wet Meadows.		Redeeming Water or Bar'n Lands.		Improving Pasture Land.		Irrigation.		Experim'ts on Manures.	
	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.
Barnstable,	$15	$15	$15	$9	$	$	$	$	$20	$	$	$	$10	$6	$	$	$	–	$10	$	$13	$
Berkshire,	27	27	27	27	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Bristol,	49	37	14	14	14	25	–	–	25	–	–	–	40	10	–	10	–	–	–	–	15	–
Essex,	–	–	–	40	70	70	15	–	100	15	–	–	25	–	–	–	25	–	–	–	25	–
Franklin,	–	–	–	–	34	25	10	–	–	–	–	–	11	–	–	–	–	–	–	–	10	–
Hampden,	–	–	–	–	–	–	–	–	45	–	–	–	10	–	10	–	–	–	–	–	14	–
Hampshire, Franklin and Hampden,	29	29	36	36	–	–	10	–	90	20	–	–	10	–	–	–	–	–	–	–	25	–
Hampshire,	–	–	–	–	18	18	8	8	32	32	–	–	20	20	–	–	–	–	–	–	12	12
Housatonic,	28	28	28	28	–	–	–	–	–	–	6	6	30	–	–	–	–	–	–	–	–	–
Middlesex,	56	61	28	28	–	–	–	–	52	52	–	–	20	12	–	–	–	–	–	–	–	–
Norfolk,	80	33	20	20	–	–	17	–	60	25	–	–	25	37	–	–	25	–	–	–	30	–
Plymouth,	–	–	–	–	49	49	15	–	60	–	–	–	–	–	–	–	–	–	–	–	25	–
Worcester,	–	–	–	–	49	49	–	–	70	15	–	–	60	–	–	15	–	–	–	10	25	–
Worcester West,	–	–	–	–	36	36	–	–	45	30	–	–	–	–	–	–	–	–	–	–	10	–
	196	184	168	202	270	272	75	8	599	189	6	6	261	85	10	25	50	–	10	10	204	12

PREMIUMS—Continued.

SOCIETIES.	Turning in crops as Manures.		Preparation of Compost Manure.		Milk.		Bread.		Maple Sugar		Butter.		Cheese.		Bees and Honey.		Grain Crops.		Root and Vegetable Crops.		Bean Crops.	
	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.
Barnstable,	$	–	$	$	$	$	$	$	$	–	10	$	$6	$	$	$	29½	19	19½	$	$4½	$3
Berkshire,	–	–	–	–	–	–	–	–	–	–	14	21	14	21	–	–	142	124	28	38	–	5
Bristol,	–	–	–	–	–	–	8	8	–	–	23	23	16	–	15	15	58	18	128	33	10	–
Essex,	15	–	–	–	–	–	–	–	–	–	48	43	24	–	–	–	36	22	48	22	6	–
Franklin,	–	–	–	–	–	–	3¾	4¼	–	–	7½	6½	3½	3½	–	–	40	18	6	12	–	–
Hampden,	9	–	–	–	–	–	4½	5¾	–	–	15	16	15	10½	3½	3½	31	17	23	–	6	–
Hampshire, Franklin and Hampden,	–	–	–	–	–	–	12	10	–	–	18	15	9	9	1½	1	35	20	20	6	–	–
Hampshire,	–	–	–	–	–	–	9½	8½	2¼	–	13	14	5	4½	–	–	26	7½	10	–	–	–
Housatonic,	–	–	–	–	–	–	–	–	2	–	21	20	21	20	–	–	121	124	31	30	5	5
Middlesex,	–	–	–	–	–	–	14	14	–	–	20	11	–	–	–	–	45	–	23	–	–	–
Norfolk,	14	–	–	–	32	22	20	27	–	–	90	60	10	–	–	–	44	42	76	30	6	–
Plymouth,	–	–	40	34	–	–	–	–	–	–	25	25	25	25	–	–	104	71	38	40	10	6
Worcester,	–	–	–	–	–	–	–	–	–	–	25	13	35	35	–	–	–	–	59	22	–	–
Worcester West,	–	–	–	–	–	–	–	–	–	–	21	21	29	29	–	–	32	7	23	9	–	–
	38	–	40	34	32	22	71¾	77½	4¼	–	350½	288½	212½	157½	20	19½	743½	489½	532½	242	47½	19

PREMIUMS—Continued.

SOCIETIES.	Broom Corn		Flax.		Hay Crop.		Hay Seed.		Fruits and Vegetables.		Flowers.		Cranberries.		Forrest Trees.		Trees set by Roadside.		Fruit Trees.		Hedges.	
	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.
Barnstable,	$ –	–	$ –	–	$8	$5	$ –	–	$8½	$12	$ –	$4½	$9	$9½	$10	$6	$ –	–	$18	$ –	$ –	–
Berkshire,	–	–	–	–	–	–	5	–	19	42	–	12	–	–	–	18	–	–	18	–	–	–
Bristol,	–	–	–	–	–	–	–	–	83	84	14	12	15	–	105	90	27	–	88	–	–	–
Essex,	–	–	–	–	–	–	–	–	46	54	10	10	30	–	180	–	–	–	–	–	–	–
Franklin,	–	–	–	–	–	–	–	–	24	20½	–	–	3	–	10	–	33	–	–	–	–	–
Hampden,	6	–	–	–	–	–	7¼	–	46	46½	–	11	–	–	–	–	–	–	32	–	–	–
Hampshire, Franklin and Hampden,	–	–	–	–	–	–	5	–	23	39¾	–	–	10	–	20	–	–	–	32	–	–	–
Hampshire,	3	–	5	–	5	–	–	–	31½	11½	–	–	–	–	5	–	–	–	35	25	–	–
Housatonic,	–	–	–	–	–	–	9	13	55	63	–	–	–	–	–	–	24	–	32	–	–	–
Middlesex,	–	–	40	–	–	–	–	–	16½	99	–	1	50	–	93	–	–	–	43	43	–	–
Norfolk,	–	–	–	–	6	–	–	–	45	61	15	6	25	–	30	–	50	–	93	15	15	–
Plymouth,	–	–	–	–	–	–	–	–	48	35½	–	–	16	–	195	30	–	–	38	–	–	–
Worcester,	–	–	–	–	–	–	–	–	–	–	–	–	–	–	10	–	–	–	–	–	–	–
Worcester West,	–	–	–	–	–	–	–	–	20	20	–	–	–	–	30	–	–	–	–	–	–	–
	9	–	45	–	19	5	26¾	13	465½	588¾	39	56½	158	9½	688	144	134	–	429	83	15	–

PREMIUMS—Continued.

SOCIETIES.	Mulberry Trees and Silk.		New and valuable Grasses.		New and valuable Native Fruits and Seedling Potatoes.		Comparative value of Crops as Food for Cattle.		Spading.		Fattening Cattle and Swine.		Soiling Cattle.		Implements and Inventions.		Agricultural Essays.		Domestic Manufact's.		Miscellan's.	
	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.	Premiums Offered.	Premiums Awarded.
Barnstable,	$ –	–	$ –	–	$ –	–	$ –	–	$ –	$ –	$ –	–	$ –	–	$5	$ –	$ –	$ –	30¼	49¼	12½	$ –
Berkshire,	–	–	–	–	–	–	–	–	–	–	–	–	–	–	30	22	–	–	79	96½	5	5
Bristol,	–	–	8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	80	94¾	75	101
Essex,	–	–	–	–	105	–	25	–	–	–	15	–	–	–	–	–	10	10	–	–	108	89½
Franklin,	–	–	–	–	–	–	–	–	–	–	–	–	–	–	21½	20	–	–	–	–	34½	51¼
Hampden,	–	–	–	–	–	–	–	–	–	–	5	–	–	–	–	–	–	–	–	–	70	–
Hampshire, Franklin and Hampden,	–	–	–	–	–	–	–	–	–	–	–	–	–	–	10	–	–	–	46	45½	22	55
Hampshire,	–	–	–	–	–	–	–	–	–	–	–	–	–	–	25	–	–	–	–	–	31½	37½
Housatonic,	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	138	136
Middlesex,	60	–	–	–	–	–	–	–	–	–	–	–	–	–	20	17	–	–	40	37	–	–
Norfolk,	–	–	–	–	70	–	25	–	15	15	28	–	25	–	40	–	170	–	56	35	–	–
Plymouth,	12	–	–	–	–	–	–	–	–	–	–	–	–	–	12	8	30	–	75	75	100	57½
Worcester,	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	–
Worcester West,	–	–	–	–	–	–	–	–	–	–	–	–	–	–	8	8	–	–	40	33½	–	–
	72	–	8	–	175	–	50	–	15	15	48	–	25	–	171½	75	210	10	446¼	466½	599½	535¾

ABSTRACT

Showing the Aggregate Amount of Premiums Offered and Awarded by the different Agricultural Societies.

	Premiums Offered.	Premiums and Gratuities Awarded.
Barnstable,	$398 25	$222 75
Berkshire,	813 00	842 50
Bristol,	1,209 00	911 25
Essex,	1,304 00	556 50
Franklin,	532 75	444 50
Hampden,	764 25	484 75
Hampshire, Franklin and Hampden,	795 50	557 50
Hampshire,	513 25	550 50
Housatonic,	891 00	825 00
Middlesex,	859 50	584 00
Norfolk,	1,624 00	686 00
Plymouth,	1,074 00	653 75
Worcester,	790 00	552 00
Worcester West,	646 00	459 50
	$12,214 50	$8,330 50

The amount of all gratuities granted by the Societies is included in the sum total of premiums awarded. In addition to the above aggregates, many of the Societies awarded agricultural books, medals, and plate. Of the value of these last no return has been made. Owing to the great variety of forms in which the different Societies make up their annual statement, it is impossible to make the foregoing abstract perfectly accurate. It is near enough, however, to make the general results sufficiently reliable.

AGRICULTURAL EXHIBITIONS FOR 1853.

Worcester County Society,	September	21 & 22.
Norfolk County Society,	"	27 & 28.
Essex County Society,	"	28 & 29.
Housatonic County Society,	"	28 & 29.
Worcester West County Society,	"	30.
Bristol County Society,	October	4 & 5.
Middlesex County Society,	"	4 & 5.
Berkshire County Society,	"	5 & 6.
Plymouth County Society,	"	6.
Franklin County Society,	"	6 & 7.
Barnstable County Society,		
Hampshire, Franklin and Hampden Society,	"	11 & 12.
Hampden County Society,	"	13 & 14.
Hampshire County Society,	"	26.

SELECTIONS FROM ADDRESSES

TO

AGRICULTURAL SOCIETIES.

THE FARMER MUST BE EDUCATED.

[*Extracts from an Address delivered by* General H. K. Oliver, *at the Exhibition of the Essex County Agricultural Society, held on the 30th day of September last, at Lawrence.*]

But if the farmers have done so much, and done it so well, the nation will confidently look to them to do still more. If they have been

"Great in the council, mighty in the field,"

the country will expect of them, and have a right to require of them, still greater and mightier deeds. And to be equal to this most just expectation and this most righteous requirement, the farmer must be educated,—yes, educated. Not that he is now, or has been, an uneducated man; but he is not, and has not been, educated enough. He must be educated still further, —educated specially for the great work of his calling, that he may be enabled to bring forth greater and better results, by the application of a more enlarged mind, and a wider and more liberal study in agricultural science; that he may be enabled to double his crops, without exhausting or impoverishing his soil; nay, by actually enriching it, may secure the largest return for the money expended and the labor bestowed;—and educated collaterally, that he may, as a good citizen, mindful

and watchful of the best interests of his country, take a prominent part, either as an elector, or as an elected member of some branch of town, county, state or national government. All these he must do well, and he may and will do them well, if he be well educated. All this he may do, without peril of becoming a brangling demagogue, or a hungry seeker for place and for its profits. I think his acquired tastes as a farmer, will protect him against temptation in this direction. For I cannot conceive, if he be a true farmer, and a devoted lover of a farmer's life and a farmer's joys, that he would be willing to change the plough and the sweet odor of field and wood,—the varied, cheerful music of nature that fills and blesses the country air, the secure quiet of his home,—his fields of ripening corn, his sheaves of golden wheat, his ruddy apples, the mellow fruits of his orchard,—his rich crops of yellow grain, his mown lands, glittering with sun and dew,—his verdant pastures, and his groves, "God's first temples,"

> "His rills, melodious, pure and cool,
> And meads with life, and mirth, and beauty crowned;"—*Beattie's Minstrel.*

his majestic oaks, and beautiful elms,—his herds of lowing cattle and his bleating sheep,—his mountains, valleys, hills,—the glories of his early morns, the gorgeous beauty of his setting suns, and the radiant shine of his harvest moons,—the fantastic yet brilliant garb of his autumn leaves,—for all the pomp and circumstance, the tinselled dazzle and the cumbrous splendor of fashion and the town,—for a bald chance of a first and last speech beneath the dome of the senate, or for a rude jostle for eminence among a crowd of political brawlers and scramblers for office,

> ——— "Gleaners of the spoils,
> Who breathe around a pestilential breath,
> Till virtue's self is tainted with the touch."
> *Dawes' Athenia of Damascus.*

And yet he would do wrong, did he not keep up a well-judged participation in political matters; and it is here, in the United States, here and now, that the just position of you farmers, as a controlling element in the government, is acknowledged, and that your influence is felt, is desired, and is welcomed.

But turning to the more grateful subject of the farmer's agricultural education, I find a wider field of interest opening out before me, too extensive to be discussed in detail, even if such discussion were not an unpardonable exaction upon your patience. I shall do no such thing; but I do urge, with special earnestness upon you, that while you cultivate your farms and bring to bear upon them, every appliance that can enrich and invigorate them, and so increase their productiveness,—making two blades of grass to grow where but one grew before,—making two golden apples to smile from the branch, where but one before

"Did glitter in the sunbeam;"

that doing so much for earth, you should not omit to do something towards enriching and invigorating your own intellect, that you may make two useful thoughts to spring where but one sprang before; something towards the cultivating of your moral nature, that you may make two useful acts to live and do their blessed work, where but one had blessed before. Your own *interest* is deeply concerned, and certainly promoted by a steady perseverance in such culture. I tell you that the wiser you are, in all proper and useful wisdom, the better and the more abundant will be the results you can secure from every acre of your property. The more you acquire by careful study and thought and observation, with the wiser and surer judgment, and with the greater certainty of success, under the blessing of Him who hath given the earth to man for a possession, and hath insured by His promise that can never fail, that "seed time and harvest, and day and night, shall not cease, while the earth remaineth," will you prepare the fields of that earth for the reception of that seed, and wait the just time of day and of night, for the coming and the gathering of that harvest.

The farm was made for the farmer, and not the farmer for the farm; and is not, then, the farmer greater than the farm,—the man, than the soil he treads upon? Will you "rise up early and sit up late, and eat the bread of carefulness," that you may improve the lesser, and will you, with stolid indifference, neglect, and waste, and destroy the greater? Nay, do not commit so short-sighted a folly! Cultivate yourselves; and your homes, your wives, your children, and your farms

shall feel the benign influence of such culture, and be the better for it. Nay, more, all social relations shall be the better for it. Your town, and state, and your country, shall feel its wholesome influence, and all men shall rise up to honor and to bless you. In fact, I do not exactly see what right any man has to neglect the spirit of culture. His own self requires, and has a right to require, that he give diligent heed to it. His own family, that other part of himself, requires it of him. Society and the country require it of him. God requires it of him, for that great and good Book, that you and I, and all of us,

> Do not read
> Half so much as we need;

preaches to us from every page of its inspiration, that we neglect not "the getting of wisdom and understanding,"—that we "abound more and more, in knowledge and in judgment." All nature cries out upon you and upon me, and upon all of us, to study the mysteries that dart upon our view, from every shimmering star that twinkles in the sky,—from the firm shine of every planet, that walks its stately course round the great central sun,—from the blazing comet, that, with flaming train,

> ——"Doubles wide
> Heaven's mighty cape; and then revisits earth,
> From travel of a thousand years;"—*Young's Night Thoughts.*

from the pale moon, that with soft beams and milder light, steals from her dimly lighted chambers of the east, and walks her way through the long, silent night,—from the great sun himself,

> ——"As on the wings
> Of glory, up the East he springs,
> Angel of light, who from the time,
> That Heaven began its march sublime,
> Hath first of all the starry choir,
> Trod in his Maker's steps of fire;"—*Moore's Lalla Rookh.*

from the broad earth, upon which you tread, whose every mountain and valley, every hill-top and plain, every forest and prairie, every clod and every smallest dust, every ocean and sea, and lake and river, and gurgling brook, and drop of water, is teeming with the great mystery of life, developed or yet to be developed. Will you walk upon its glorious surface, as men who see nothing, yea blind as the worms and moles

that burrow in its dirt,—seeing nothing of the transcendant wonders that are about and above, and beneath you?

> "There are more things in Heaven and earth, Horatio,
> Than are dreamt of in your philosophy."—*Shakspeare's Hamlet.*

And will you dwell within this great laboratory of God, wherein He works out the mystery of His experiments, and refuse the invitation which even he gives, to take benefit of His lessons and their teachings, and to be wise to your own profit? Will you listen to the murmuring of the brook, that irrigates your meadow, and makes its rich crop ready for your scythe, and live in ignorance, that every drop of its waters is but the chemical result of the mingling of two invisible gases, without the presence of one of which in all the watery world, the other would, by its specific levity, seek

> The upper regions of the air,
> Doing, I know not what great mischief there;—*New Song.*

and leaving the cavernous abysses of the ocean revealed to the light of day, with

> "Wedges of gold, great anchors, heaps of pearl,
> Inestimable stones, unvalued jewels,
> Wooing the slimy bottom of the deep;"—*Shakspeare's Richard III.*

and its myriads of known and unknown monsters, to flounder, to struggle for water, and to perish for the lack of it?

Will you walk abroad and breathe the pure atmosphere of Heaven, neither knowing, nor caring to know, that, although apparently invisible, it is really not so; that it has all the properties of matter,—inertia, weight, impenetrability, elasticity, and compressibility,—and yet is likewise but the chemical union of two invisible gases, in such mixture that while one alone would produce death to all that should inhale it, and the other alone would produce excess of life,—the two are so justly and nicely balanced by the wise laws of an all-wise God, as to form an air, at once best fitted to support life, animal and vegetable, and best fitted for respiration? Are you willing to be ignorant, that if to certain proportions of the three gases of which I speak,—oxygen, hydrogen, and nitrogen,—you add carbon, which is, in its pure state, as furnished by nature, the diamond that dazzles from the brow of royalty, and in its

ordinary form, the charcoal that dinges and darkens the face of the collier, you have, by such addition and combination, a product, of which are made your trees and plants, your shrubs and bushes, your grasses and grains, your fruits and your flowers?

Ah! I very much fear, that you too often mow down the grass of your fields for the food of your beasts,—you too often thrust the sickle into your yellow harvests of wheat, and gather it into your rich granaries; you heap up the fallen leaves and decayed wood of your forests for manure,—you hew down the mighty oaks, that adorn your fields, and prostrate the tall pine, the monarch of your groves, without thinking what wisdom of God is displayed in the union of the few and simple elements, which, in chemical combination, make them what they are; and how by the use and power of those very elements, derived from the decayed compost of the barnyard, you yourself, though ignorant of the process, are making blades of grass and spires of wheat to grow, and leaves and trees to come again and to be renewed upon the face of the earth. There is both profit and a profitable pride in knowing all these things. Sir Walter Scott prided himself more on his knowledge and skill in the composition of manures, than on all the wonderful creations of his genius as a novelist.

Your soils consist of other chemical elements, such as silica, alumina, lime, magnesia, the oxide of iron, potassa and soda, and these came from the disintegration and comminution of the primitive rocks which constitute so much of the mass of the earth. The seeds that you commit to these soils, the bare grain—"it may chance of wheat, or of some other grain,"—feel the mysterious working of God's power upon them, waking them into life, and directing them in search of aliment appropriate to their growth. But these seeds must be cast into soils proper for their reception, their nutriment and their growth. If you cast them carelessly by the way-side, the fowls of the air devour them,—if you cast them upon stony places, where there is no deepness of earth, the scorching sun dries up their sudden growth, and they wither away,—if you cast them among thorns, the thorns spring up and choke them. But if you cast them upon good ground, they bring forth their thirty, their sixty, yea, even their hundred fold. So teacheth

the parable of Christ. Who hath ears to hear, let him hear, and let him learn.

But what is the proper ground, and where is it on your farm, Mr. Jones,—where is it on yours, Mr. Stebbins,—where is it on yours, Mr. Thompson? I dare say you can tell me. But if you had bought your farms yesterday, and had never heard nor known anything about their peculiarities of soil, nor anything about the position and characteristics of the various lots suitable for the various agricultural products you propose to cultivate; could you tell me then, without inquiry, without examination, without reflection? Now these very matters of inquiry, examination and reflection, are elements, and very essential elements, of agricultural education. And he who instructs you in what you must know in these premises, before you can take the first safe step, is, for the time being, your agricultural schoolmaster, and you are his pupil, and are in the "pursuit of knowledge under difficulties," difficulties which you would not have to encounter, had you been previously so properly educated, as that you could, by your own personal examination of the various localities on your newly purchased lands, judge and decide for yourself, in what part of them, were the soils adapted for the largest yield from the crops you propose to put in. Or, if you designed to raise large crops of certain single agricultural commodities, decide before purchase, whether any particular farm in the market,—or whether the soil of the County or of the State, were suitable for your purpose.

Again, having a superior agricultural education, you may easily decide, if you find a farm, which for satisfactory cause of locality and neighborhood, you would desire to purchase, whether it lack the elements, any, or all, necessary to the object you have in view, and whether it can be made to receive them, and so be brought into the right condition. I have read, somewhere, an account of the purchase of a farm, by the Hon. Reverdy Johnson,—near Baltimore,—the soil of which was reduced to the meanest condition of impoverishment. The last crop of corn raised upon it, yielded the infinitessimal quantity of one peck to the acre. Not knowing what to do, nor getting from the agriculturists about the neighborhood, anything more reliable than guess-counsel, he applied to a chemist,—not

again to practical farmers, for they had failed him, but to a chemist, whose vocation was not in the field, and about the soil, but in the laboratory, and the chemist visited the place, took portions of the soil and analyzed them. He found a plenty of magnesia, of lime, of potash, iron and organic matter. Yet one thing it lacked. One element of a fertile soil was wanting,—and that one absent, all the rest were nothing worth,—even as gunpowder without the kindling spark. There was no trace of phosphoric acid. He directed that the biphosphate of lime should be applied, and this having been thoroughly done, the farm in fervent and substantial gratitude for this application of the proper food to its starved and exhausted frame, poured out its rich wheat at the figure of twenty-nine bushels to the acre. Now this curer of a bad and almost hopeless soil, as it seemed to the common observer, was a book-farmer, nay, rather a book-worm, who had never been at the plough tail, never handled a rake nor swung a flail. What would you have done, Mr. Anti-book-farmer, but poked your way towards the cure in the dark, trying experiment after experiment,—perhaps hitting the nail on the head, or perhaps hitting and bruising your own fingers,—that is, wasting your time, your money and your labor to no purpose;—supposing you to work for the remedy on the terms of "no cure, no pay," —and despairing of all success, have recommended to the honorable gentleman, if he had no other means of living than the yield of this hopeless farm, to sell it for the most he could get, pack up his traps, and push for the West or for California.

I am aware that there are very many most excellent farmers, possessing great practical skill in their vocation, and so producing most excellent results in their culture of their farms. And were you to take issue with me, and to ask the question, whether there have not been more successful farmers, without education specially as such,—than there have been successful farmers with education, it might be difficult for me to sustain my argument by proving the latter to have been the case, though perhaps a good point might be made by showing that one cause for its not having prevailed is, that it is of comparatively recent date, that the subject of the education of the farmer with distinct reference to his calling, has been specially

urged. Cicero has some remarks, which, with their reasoning and with but slight change, I might adopt here—though originally applied in another connection. "I own," he says in his oration for the poet Archias, from which I have already made quotation,—"I own, that there have been many men of excellent talent and of preëminent virtue, who, without learning, and by the almost divine force of nature herself, have been wise and eminent,—nay, farther, that nature without learning, is of greater efficacy towards the attainment of glory and virtue, than learning without nature. But then, I affirm, that when to an excellent natural talent, the advantages of learning are added, then there results from such union, something great and extraordinary."

The appeal I have made thus far, has been urged more directly upon the farmer now actually engaged in his work, and not in reference to the prospective farmer. For the right education and culture of the latter, I shall have no fears, if I can prevail upon the former to yield to my arguments and become, as soon as may be, an educated man, self-educated, and they are among the best educated. The moment he shall feel the benefits of education, he will be most desirous that the young farmer should have those benefits before he goes between the plough-handles, or first swings the scythe. How the latter shall be provided for, and what means of right education shall be secured,—will naturally suggest themselves to the mind of the former, when it shall itself have been liberalized by the influences of this very education, for which we plead. He will require an agricultural department to be established by congress, as a part of the executive organization of the general government. This, like many other useful and necessary projects, which it is the proper office of congress to discuss, and when approved, as this particular one could not fail to be approved, to put into active operation, has, I regret to say it, hitherto failed of success.

Again, farmers will require that there be in each State, what has already been established by our own legislature at its last session, a State Board of Agriculture, with a working secretary, competent in every department of agricultural science and art, to act as an organ of communication, between the State government and the several agricultural societies throughout the

Commonwealth, and to communicate instruction and advice to every farmer who should consult him. What an impulse to agriculture would the right man for the place impart! They will further require that there be created, what Massachusetts yet lacks, agricultural schools, in such number and location as would accommodate the several parts of the State, to be taught by men of extensive attainment in all science having any connection with agriculture, aided by men already skilled in all the practical operations of actual farming.

I will not stop to make detailed statements of the studies that should be pursued in such schools. They have been exactly and admirably set forth in the report of the commissioners upon that subject, made to our legislature by Professor Hitchcock, in the session of 1851. Let me commend this report to your notice in all its minute details, as worthy of your special attention. Let me further commend to your careful reading, the excellent address delivered before your society by the Rev. Mr. Braman, of Danvers, at your last anniversary. The argument in favor of what is here recommended, (and this recommendation is but the reiteration of what has been recommended a hundred times before,) is there most fully and admirably set forth and needs no addition from me. Into these schools, I would be glad to see thronging, the sons of our farmers, who intend to follow the pursuits of their fathers, and our young graduates of college, adopting the agricultural life, in preference to taking their chances in professions already over-stocked, and all selecting the country for a residence, rather than risking the life of their bodies and souls amid the multitudinous temptations of the city.

The chief obstacle which the present farmer will encounter in his effort at self-education, will be his own prejudices and those of his class,—and these prejudices barricade the way of his progress. I remember that when a boy, and not obeying the counsel of my mother, on a certain occasion,—and I found out, after taking my own course, that I had made a great mistake,—I remember that she looked at me reproachfully, and said, "Harry you stand in your own light." A gentleman who was near and heard the remark, suddenly turning upon me, cried in my ear, with so loud a voice, that its echo has not left me in the forty years that have since elapsed, "Harry, get out

of your own light." Now I say to every farmer who pertinaciously clings to old maxims, old modes, old tools and old traditions, simply because he thinks,—if he think at all in the matter,—that they must be the best for their odor of age, and obstinately shuts his eyes, that he may not see anything new, and plugs up his ears, that he may not hear anything new relating to his craft, that he stands in his own light, and I should like to scream into his ear, with the intense shriek of a steam-whistle, and have the sound tickle his tympanum, as it will mine to my dying day—"Get out of your own light!" Let the sun of science, which is pouring and diffusing its life-giving and gladdening beams all over the manipulatory processes of every art and craft, shine in upon, and illumine and benefit yours,—yes, yours, which, in fact, "is no longer a mere art or craft, but," as Marshall, an English writer of the last century, well observes, "is a science, which, when viewed in all its branches, and to their fullest extent, is not only the most important and the most difficult in rural economies, but in the circle of sciences."

Nay it is both a difficult science and a difficult art, for it comprises as a science, a knowledge of the animal, vegetable and mineral kingdoms; a knowledge of the chemical constituents, of soils, and of atmospheric phenomena, of every sort; and a knowledge of the mechanical agents necessary in agricultural manipulations,—and as an art, it implies a knowledge of the proper method of selecting and laying out of lands, and of their management and improvement; a knowledge of the best modes of culture; a knowledge of the economy of live stock; of the best method of raising vegetables, and of managing a dairy, and of entering the market with his merchandise, whether as a wholesale or retail product.

If then science reveal to you new implements of husbandry, professing to save labor and to increase product, try them, so far as they may be applicable to your exigencies, and see if they be true to their profession. You are not called upon to believe in everything new, any more than you should believe in everything because it is old. Try what you think may be useful to you, and let your neighbors do the same. Let the good be put to good use, and reject the bad. In the course of my experience as a manufacturer for a few years

past, my attention has been frequently called to many articles of machinery, either wholly new in their construction, or intended to be applied to existing machinery to correct and improve its operation; to increase product with the same amount of labor, and by so doing, to cheapen the cost of the manufactured article. Whatever, after proper examination and discussion and counselling with the experienced men that assist me, seemed to have claim to a trial, received it. If it passed the ordeal, it was adopted; if it failed, it was rejected. You will find your account in doing the same, whether in reference to a new farming implement, or to new modes of using old ones; to a new method of preparing your compost of manure and of applying it to your grounds, or to new modes of planting, sowing, and of managing the growth of crops, or of reaping and harvesting them.

Now I confess, that while I have all the respect for old implements and old modes of husbandry, and for ancient farmers and ancient writers on farming, many of whom wrote and counselled admirably, I have not any more, and will not give them any more than just what they deserve. I remember that when quite young, I once saw a farm laborer winnowing grain by the slow and tiresome operation of tossing it up and down in a sieve, the heavy parts dropping in a heap, and the chaff being driven off by the wind. This mode, if deserving of praise, and of being continued in the ratio of its antiquity, would be entitled to very special commendation and perpetuity of use, for it was practised by the Roman laborer before the birth of Christ;—and I find, in Homer's Iliad, the events of which date back to the remote period of nearly twelve hundred years before the Christian era, the following allusions to the same implement and practice:

> "As from the peasant's fan the wafted chaff,
> Parted by golden Ceres from the grain,
> Falls in thick showers and whitens all around."—*Iliad, V.* 499.

And again,

> "As vetches, or as swarthy beans,
> Leap from the van and fly athwart the floor,
> By sharp winds driven and the winnower's force."—*Iliad, XIII.* 588.

Now this is old enough. But since this sight of my youth, I have seen another, and I certainly think, a better mode, and

that is, winnowing by a machine, which, "instead of waiting for whatever dispensation of wind Providence was pleased to send upon the sheeling-hill," as honest and simple old Mause argued in "Old Mortality," raised it by the human means of pulleys and fans, and did the business of separating the chaff from the wheat in a better, quicker, and cheaper way. What more would you have? Yet the use of a winnowing machine was obstinately opposed by the farmers of Scotland, where it first appeared, and was denounced from the pulpit as a devilish and presumptuous invention of the arch enemy of souls. And this same obstinacy of prejudice, and stolid sticking to old habits, are not yet dead, though they must eventually fade out before the light, the spirit and the progress of the age. If nothing new is as good as the old, and the old was well enough as it was, why then, use your fingers instead of a fork to put your meat into your mouth; use a piece of bark for a plate;—use the camel, the ass, the mule,—for all purposes of vicarious locomotion, and put away your hissing-hot and thundering iron-horse with his hurricane speed, and his shrieking, deafening whistle. None of you believe in any such nonsense; and if improvements in these things meet your approbation, and you would never consent that the world should be without them, why will you not use the same candor of judgment, in relation to novelties, either of implement or of operation, in your own calling?

Do not misunderstand me, and go away with the impression that, since I commend to you the new and the progressive, I have a low opinion of all the old of all ages of the world,—or that I condemn or think slightingly of ancient husbandry. Let me prevent such unjust deduction. In the many years which I spent in studying the classical writers of Greece and of Rome, I could not do otherwise, even with but a moderate degree of attention, than to acquire some knowledge of the agriculture of the ancients, and it was my first design to address you on that theme, contrasting it with the methods of the moderns. But recording my thoughts as they rose within me, I was led by them in another direction. Yet let me here say in brief, what I might have said more in detail, that agriculture was held in the highest estimation among the earlier and later nations of antiquity. Kings were its "nursing fathers, and queens its

nursing mothers,"—and the mightiest monarchs saw and felt their highest glory to be found in honoring the plough. Egypt ascribed its introduction to mortals, as the great work of her gods, and Greece and Rome dedicated temples and erected statues in its honor. The greatest geniuses and the noblest intellects of antiquity threw the whole force of their minds, in extolling its praises, in advocating its importance, and even, like glorious Virgil, in giving practical directions in all its important details,—and many of these details furnish not only curious, but really useful information. Some of the maxims of the Roman farmers are almost identical with those recently, if not still in use among the best modern English farmers. It could not be uninteresting to the studious farmer, nor "altogether useless," as Dickson rightly observes in his elaborate work on "The Husbandry of the Ancients," to communicate to him a knowledge of the practices of ancient nations, famous for their wisdom, and whose greatest men applied themselves to the study and practice of agriculture."

I have said thus little in reference to the husbandry of antiquity, that I may not be misinterpreted in being said to have spoken lightly of it. It is not that I esteem or love ancient husbandry, its old modes and old tools and devices, less,—but that being nearer and more interested in things of my own day, and desirous of their good, I love modern husbandry more, and greatly desire its further improvement. In securing that improvement, you will take all the good you can find in the store-houses of former days, and add all the good you can get, from the studies, the researches, the suggestions and the implements of modern times.

Be, then, more liberal and enlarged in your views; more ready to examine into what is going on in your line of life in other localities; more earnest to test alleged improvements; more willing to examine, than to sneer at them, when proposed for your consideration; more willing to let your natural good sense, by its own unimpeded action, deliver you from the shackles of old prejudices and old obstinacy against progress, and you shall find light shining upon your way with a brilliancy before unknown to you, and guiding you to the attainment of results that your best imaginings had never conceived. Everything about you will be bettered. That tasteless, un-

graceful and awkward "palace of pine boards, grown venerably black with time,—but so rickety, flimsy, that every blast of wind gives it a fit of the ague,"*—and shall give way to a structure, which, with its symmetrical proportions, its thorough workmanship, and its beautiful home-expression and harmony with the rural objects that surround it, shall combine all that is useful, convenient and comfortable for its inmates. The smallest house can be so made. You will find that the beautiful in architecture, though distinct from the useful, is in harmony with it, and that they each aid and adorn the other. I do not say that every farmer must go to work and demolish his old house, and put up a new and elegant one. That might be a pleasant thing to the lumbermen, the masons, and the carpenters; but might not be so well for the farmer's pocket. "Fun for one, but death" to the other, as said the frogs in the fable, might apply to such case. But I do say that when he does build one, or when he alters, or adds to the old one, he need not persevere in perpetuating all that is homely and tasteless. Many farmers, I know, take the "old homestead." Well, that "old homestead" hath many delightful associations connected with it, from "the old oaken bucket that hung in the well," and the row of old beehives that murmured beyond the wall, to the pleasant faces that clustered round the family hearth. But the "old homesteads," when repaired, as they must occasionally be, may be repaired by the eye and hand of good sense and good taste. Its associations shall be all the more pleasant for the embellishments you may add to it, all in the rural way. A grape vine, a climbing rose, the "Queen of the Prairies" or the "Baltimore Belle" may be thrown against its walls, or be made to twine above the door or window. In front, some shade trees, our beautiful maples, or ashes or limes or double-flowering cherries and apples, may keep off the intenser sun of summer. Within the front enclosure a neat flower garden, yes, *a flower garden*, with perpetual roses, and iris, and gladiolus, and asters, and dahlias, may be arranged with the least amount of labor required, and the good wife and the children may take the care of it, and with you enjoy the comfort of it. I say the good wife and children,—for these every farmer must have, or home is no home. A wifeless,

* Washington Irving.

childless farmer, one who is so by culpable coldness and neglect of his own, is a selfish, chilly-hearted monster, who walks his dismal pilgrimage in mouldy loneliness, and should know no peace till he yields to matrimony. There are very many faculties given us by our Maker, to be cultivated by us for our own happiness, and the more we cultivate the innocent and refined ones, the happier and the better we shall be. Home, with all its concomitants of wife, children, books, music, flowers, and social intercourse, is, and ought to be, the dearest spot of all the earth. You may make it, or mar it. Adorn, then, your homes, within and without, and home shall adorn and comfort you. Your children will be more attached to it, and less likely to leave it for Californias or Far-Wests, and more likely to settle in its neighborhood, and to build other and tasteful abodes. Let me commend to you, in this connection, the work on "Country Houses," by the late lamented Downing, who perished in the "Henry Clay," to the deep sorrow of every admirer of the beautiful in architecture, and in gardening, and who had done so much for the diffusion of an improved taste in all that relates to rural affairs. There perished the tasteful student of nature, whose life has been to his countrymen, a mission of beauty; whose ripe judgment, and vivid imagination, and loving insight into the sweet, tender secrets of mother-earth, have been bodied forth in artistic combinations and suggestions, that have awakened a new spirit of taste in the community, and made many a glorious landscape a monument of beauty to his loved and honored name.

His books will teach you, how easily you may combine the beautiful with the good, the useful with the elegant.

The whole country suffers when such men as Downing and Norton are taken away. The latter gentleman was appointed, a few years since, to a new professorship in Yale College, that of "Chemistry applied to Agriculture and the Phenomena of Vegetable and Animal Life." Though young, he was one of the highest ornaments of learning, and gave assurance that could not fail, that if spared, his influence and his teachings would prove of the highest value to the agricultural interest. Each was invaluable in his vocation, the one leading the way and directing to the useful, and the other showing how to unite ornament and beauty to utility.

Nor shall your dwelling only, feel the good effects of the improvement in education and taste, for which I have pleaded. Everything around you shall be bettered. That rickety old barn, which the winds of heaven, and the rains and the snows have desolated and rendered unfit to pretend to house the shivering cattle that deserve a better fate, shall no longer disgrace you its owner, and the ground it stands on. You will supply the beasts that faithfully serve you, with comfortable quarters, remembering that the more thoroughly you secure them from the cold of winter, the less food they will require. "For it is well known, that the extra supply of heat needed by animals in cold weather if not supplied by warm housing, must be supplied by an extra consumption of food, and yet this extra food adds nothing to the flesh or strength of the animals."—*Downing's "Country Houses."*

Cleanliness will also characterize its interior, and you will be sure that all the manure shall be thrown into its appropriate place, and none of it be allowed to accumulate and stick upon the flanks of your oxen and cows, injuring their health, and insuring to yourself the reputation of being a nasty sloven.

That uncared for piggery, that slough of despond, that stew of stercoraceous stench, that Serbonian bog of fathomless filth and miasmatic putrescence, in which your bedaubed swine struggle and wallow; and that unsightly quagmire of needless nastiness, in which an unsympathizing slovenliness compels the "lowing sweet-breathed kine" to slump, and wives and daughters to wade, ankle-deep, as they toil to reach the "milky-way,"—these shall both disappear, to give place to accommodations which, combining neatness with utility, shall be at once agreeable to the eyes, and just as profitable to you, if not more so, as laboratories and store-houses of your indispensable compost. This same spirit of improvement will exhibit itself all over your farm. You will have better stock, better trees, better fruits, better grains and vegetables, better fields, and fences, and walls,—better people about you, better neighbors, and yourself and household be better themselves and betterers of the whole community.

CHEMISTRY IN ITS RELATIONS TO AGRICULTURE.

[*Extracts from an Address, Delivered at Concord, Mass., before the Middlesex Agricultural Society, at its last Exhibition, by* Hon. L. V. Bell.]

Upon the first development of the new science of chemistry, the agricultural world instinctively looked to it, as the bearer of good tidings to its art. It so let the world into the hidden mysteries of things in the arts, that there was a natural expectation that it was to serve in elucidating the arcana of vegetable growth. In glass manufacture, calico printing, color making, metallurgy, and a hundred other of the like *mysteries*, as the arts were termed in the indentures of those who were to serve a seven years' apprenticeship in their acquisition, prior to a true chemistry, the difficult processes having been reached tentatively or accidentally, were kept as rich secrets, and the recipes were handed down as legacies and heir looms from father to son. Chemical analysis at once unfolded all these hidden results. A color, the making of which, was known to perhaps one or two families, who kept it in sacred security from their very employers, was discovered by analyzing a rag or a sample of the fabric upon which it had been impressed. A drug which existed in nature only in rare and inaccessible deposits, was compounded by mixing together two or three cheap and common ingredients. And at this hour, in every manufacturing country, a chemist is an essential of every great work, and nothing is bought, except after his determination of the exact value of the article used. One man in our capital city, after a long residence in the country where the article is made, of close observation, great experience and consummate tact, can, by breaking and scratching and examining a sample of indigo, determine its quality of coloring principle so exactly, that no failure need be feared in acting from his judgment to an extent involving thousands of dollars. Any competent operative chemist can do this same thing by the processes of his laboratory, to the same degree of precision and reliability;

a good illustration between the highest reach of experimental skill and scientific accuracy.

I have not compared the authorities closely enough to determine the date at which the true chemistry of agriculture made its first step, or the name of the earliest in this pursuit. Suffice it to say, that it is only some fifteen years back, that its history commences. During this lapse of time, a vast many students of the science have devoted themselves to its elucidation in all countries where chemistry is cultivated. For the first time in the history of the world, the farmer can now take a sample of his soil to the chemist, and say, "Sir, will or will not this earth produce wheat or flax?" and the chemist can reply, "It cannot." "Can you inform me how I can make it produce the one or the other?" "I can." And his replies shall be certain, carrying with them the demonstration of mathematical truth. Suppose the question had been asked a few years ago, "Why are guano, or crushed bones, or gypsum, a good manure in one place, and upon one crop, and not in another place for the same crop?" Could any better answer have been made, than that experiment showed that it was sometimes useful and sometimes valueless? It is so, because it is so. Now the chemist tells you that the article is a manure, because it contains certain elements which are essential to the composition of the given plant, and if the plant can get them readily enough from the soil as it is, by its elective powers, it requires no such addition; if it cannot, the guano or other material meets its exigency. He proves his science by synthesis and analysis. He takes another plant which he finds has no such component element and it grows in the soil which has refused to sustain the first plant. He adds the requisite element,—the before languishing plant revives and flourishes.

Analyses of mineral substances are among the easiest processes of the chemical laboratory, upon which the pupil commences his earliest manipulations. It was of course, to be expected that the general characters of the earthy crust would have been discovered by the earliest investigators, after chemistry became a science, for as before intimated, prior to the days of Lavoisier, who was guillotined in the French Revolution, chemistry was scarcely more entitled to the name of a science,

than animal magnetism now is. But the earlier disciples never reached the more difficult exploit of making a true analysis of animal and vegetable matters, and were not put into the way of finding out the never-ceasing relations existing between the earth and what it bears. The ashes of plants, that small per centage of residuum left, and which we now know, bears a constant and essential relation to the kind of vegetable, they considered as a mere uncertain, accidental impurity, which was not worth regarding in vegetable chemistry or physiology.

The great doctrine upon which all scientific agriculture is grounded, and which each year has done something to bring into practical use, is, that the ingredients or elements found in the soil are the same which exist in the plants, and that the minutest quantity is as indispensable to the growth and product of the plant as the largest. The two parts in one-thousand of phosphoric or sulphuric acid are as essential in making the crop of wheat yield its grain, as the one-hundred parts of animal or vegetable decayed matter. This doctrine, the key to all agriculture henceforth, they never dreamed of.

Let us make the briefest synopsis of what modern chemistry has taught us of the relations between plants and soils. I am the more inclined to occupy your time in this, inasmuch as it has not formed so far as I have been informed, the topic of any of the addresses before you on previous years. Some mind may at least be refreshed and turned to a further investigation of this great modern starting point of a true and progressive agriculture. Whoever takes up a handful of soil and attentively spreads it around, will not fail to see that it is made up of two great components, a stony or earthy part, and a part of woody or animal remains, or mould. Subjecting the specimen, after it has been freed from all water by drying, to a red heat, the latter portion will be burnt up, as we call it; in other words will be dissipated into gases or vapors.

We here get the great division of the soil into its *organic* portion, being the vegetable and animal parts which once had life in some form, and which however changed by decay, retain the elements peculiar to such former shapes, and *inorganic*, which comprises the rocks, great and small, however worn

down and broken up by friction, changes of temperature or internal decompositions, and the air and water which enter into the composition.

In burning out the organic part of a soil, the gases given off are in fact only four, and make up all that does not remain in the ashes. These gases although resembling each other in some outside particulars, as transparency, compressibility and freedom from color, are as widely removed from each other in essential characteristics, as *aqua fortis*, or alcohol, or water. Their character could not be determined from mere sight, as seen in or rather through a clear glass jar, but let bottles containing these four gases, be sent to a practical chemist, and he could be in no more danger of confounding them, than he would be in identifying milk or vinegar.

We then have, as the entire constituents of all plants, these four gases; carbon, oxygen, nitrogen and hydrogen, and whatever may be in the ashes, which is left.

The proportionate amount of organic matters in soils is very variable. In some pure sands you cannot burn out one per centum, and in some peaty soils, you may burn up seventy-five per centum, three-quarters of the whole weight, after the water has been all evaporated. The inorganic matters of the soil, having all come from the decomposition of the surface rocks, comprises of course a vast many elementary ingredients. There might, in fact, be as many as there are mineral or metallic substances known. But so far as vegetable growth or the agricultural relations are concerned, it is obvious that very many of the possible elements are entirely inert and unnecessary. Gold dust, for example, we have the best authority for believing, exists in admixture with fertile soils in California and Australia, but can do neither good nor harm to the rootlets of the vegetables, opening their mouths around it. So that in practical effect, many of the constituents of the soil may be thrown quite out of consideration, so far as vegetables used for human food are regarded.

In fact, the fairly agricultural soils may have only about a dozen of the now more than fifty elementary bodies, of which we know all created things are formed. To be sure, if one were to attempt to grow certain plants which are known to contain rare elements, it would be necessary to look beyond

these common ingredients. Iodine, for example, is an exceedingly precious medicinal article, which is manufactured from the incineration of sponge and other vegetables growing on the sea-shore. It would be perfectly useless to try to abstract iodine from plants grown away from the salt water of the ocean, which always shows this ingredient on being tested, but no more vain than it is to try to raise wheat from a soil which gives, on testing, no phosphates.

Of these dozen or fourteen elements, necessary to the formation of the ordinary edible vegetable products, silica, or silex, or flint makes up the larger proportion in most kinds of rocks, and consequently in most kinds of soils. A fair proportion of this article would be anywhere from thirty to seventy per centum, although some soils are capable of supporting some vegetables with a vastly higher ratio of pure silex. The *arundo arenaria*, a species of reed grass, which has proved of the utmost value in political economy, by its aid in reclaiming millions of acres of movable sands on the western coasts of France, and even on our own cape, by its roots binding the loose and blowing sands, is sustained in perfection where more than ninety per centum of its soil is pure flint.

Next after silex, is *alumina*, the basis of clay soils; then come lime, magnesia, soda, various acids and some oxides or rusts of metals. Let us give an illustration of the relative proportions of these in an ordinarily fertile soil, or one which will produce good fair crops without the addition of manures. Such a soil might be expected to present in every thousand pounds in weight, a hundred pounds of organic matters; six or seven hundred of silex; fifty or sixty of lime, and the same of alumina, and from two to eight pounds each of potash, soda and magnesia; forty pounds of carbonic acid and two to four pounds each of phosphoric and sulphuric acids. And as before suggested, it is just as fatal, so far as specific plants are concerned, to leave out the one as the other of the various components.

The question will naturally be asked, "Where do such ingredients as potash, soda, and oil of vitriol, drugs we know in every day experience as the costly, corrosive and strongly marked articles of the apothecaries' shelves, come from?" The reply is easy, for their whereabouts in the soil is one of the

points demonstrable by the very youngest student in analytical chemistry. They exist not as separate and disjunct ingredients, but so combined together that their peculiar traits are lost so far as external characteristics are concerned, in the compound. For example, oil of vitriol and lime, both exceedingly caustic, when united form plaster of Paris, whose extraordinary inertness is well known.

While the soil is made up of the dust or detritus of the rocks under it, or as is much more common, of those which have been swept over the underlying ledge by some great diluvial currents, (for soil without a trace of lime is often found resting on limestone ledges,) of course the elementary ingredients which entered into the rocks originally, will be found in the soil, and are gradually brought into new combinations by their effects upon each other, and especially as recently discovered, by the galvanic or vital action of the roots of growing vegetables upon them.

Take for example, our most common rock, granite. You cast your eye upon its pepper and salt colored surface, and you will have no difficulty in making out that it is composed of three different minerals, stirred together as it were loosely, so irregularly in fact, that all conditions of coarseness and fineness exist. While in the fine, equable and good varieties, each inch is tinted and arranged like each other inch, in the coarser forms, pieces of one of the minerals as large as hogsheads may be observed, and veins, streaks, and contorted dykes of what elsewhere in the same stratum may be thoroughly incorporated and uniform granite, are prominent. One of the components of granite is quartz, resembling clear or smoky glass, the second is the isinglass or mica, in scales usually of the size of the section of a pin's head, but which may exist in plates five or six feet square, and the third is the pearly lustred, opake, whitish, or yellowish, or rose-tinted stone known as felspar. Now this felspar contains, fifteen to twenty per cent. of potash, as pure as any that ever passed inspection. It is so closely combined, that it does not rapidly decompose. Buildings of granite will last for ages in dry climates, but a piece put into the soil where vegetation is active over it, will speedily lose weight.

I have alluded before to this wonderful dissolving power in the roots of growing plants. A curious illustration of this

occurred to me within a short period. There was picked up, in the cultivated part of the garden of the place where I reside, a fragment of a common green glass bottle, (made as such ware is, by melting sand and ashes together in a strong heat,) upon which, while molten, there had been impressed a seal or stamp to mark the identity of the wine it was to contain, with the inscription, "*P. Faneuil*, 1741"—the same Peter Faneuil, no doubt, to whom Boston is indebted for the material structure of the "Cradle of Liberty." Circumstances of occupancy, not necessary here to be recapitulated, make it certain that that bottle must have been in that garden more than seventy years, and in all probability, one crop after another had grown successively in close proximity to it, for that space of time. It bore abundant and deep marks of the solvent power aluded to, in marked erosions, of every degree of depth from cavities to a mere removal of the enamel or polish.

Some of the varieties of minerals common in all soils have soda instead of potash. Lime is attainable in soils which give no indication to one who looks for any specimen, however minute, of limestone, and where no limerock ledge may exist within a hundred miles. Sienite, for example, which is a common ledge rock of this State, variously known as Quincy or Gloucester granite, although really no granite at all, contains, as one of its three constituents, the mineral, *hornblende*, which gives the complexion, whether black or buff colored, to the stone. Hornblende contains eighteen or twenty per cent. of magnesia and fourteen or more of lime.

Without elaborating or exemplifying at any greater length the universally admitted facts that the inorganic part of soils, and the rocks from which they are derived, have all the ingredients, alkalis, earths, acids and oxides which are found in the composition of the plants themselves, let us continue a further examination into the constituents of vegetable growths. While in soils, the organic part has a very small ratio to the whole mass, the reverse is remarkably the case in plants. We have spoken of a soil naturally fertile as having ten per centum of combustible or organic material. There are very few plants which will have an amount of ashes equal to one-fifth of their dried weight, while some have as small a proportion as one-hundredth. Different portions of a plant, its bark, leaves,

wood and especially its fruit or seed, vary quite essentially in the quantity of ashes, as well as the elements into which the ashes are resolvable.

The gaseous products of the burnt plant have precisely the same nature, as those which result from the organic portion of the soil, and nothing more. All vegetables, poisonous, medicinal, nutritive, fragrant or nauseous, acid, tasteless or aromatic, tender or tough, white or colored, are constituted of the four gases before-mentioned, (and even one of these, nitrogen, is occasionally absent,) and whatever is left in the ashes.

Plants thus obtain all their inorganic and a portion of their organic components from the ground, as is now proved beyond question by experiment and analysis, notwithstanding there are authorities on botany and vegetable physiology, published within our own day, which express the idea that plants are actually indebted to the ground for little, if anything, but water, leaving the notorious fact, that one soil is more fertile than another, unexplained. A portion of the organic materials undoubtedly are obtained by absorption from the atmosphere, through the leaves. Carbonic acid, for illustration, which is a combination of carbon and oxygen, exists always in the air, a small and uniform quantity being everywhere diffused throughout it, whether the specimen be taken from the very top of Mount Blanc or the lowest depth of the profoundest mine. By the processes of that living chemistry ever in action, the oxygen is separated from its combination and leaves the carbon behind. When the woody structure is burnt under circumstances to drive off some parts and leave others, we know this carbon under its form of charcoal. The fact that a plant closely covered with a glass vessel gives out oxygen, which can be separated, is proof positive of this one of the many facts of vegetable chemistry.

Now in the ashes of plants, with a single possible exception connected with alumina, and which may hereafter be proved to be unreal, are found every one of the dozen or so of ingredients, which are proved to exist in fertile soils. For example, in the ashes of the potato, there is fifty six per cent. of potash, thirteen of phosphoric acid, fourteen of sulphuric acid, nine of iron, magnesia and lime, and four of silex.

When thus much was demonstrated of the essentiality of a

given ingredient in a soil to the production of a plant, in which the same component had been proved to exist, the way was open for direct and unmistakable tests of the theory in the large way of practice.

Observation and experience had already shown much of that, which the theory above briefly outlined gave a ready and satisfactory explanation. It has, for example, been long noted, Virgil even indicates it, that where a particular crop had been grown for a series of seasons on the same fields, the land had become tired of it. The practice of longer or shorter rotations naturally followed, and it was found that so entire and irretrievable had been the exhaustion in some cases, certain crops must be left entirely out of the series of rotations. The agriculturist could, a few years ago, only explain these facts by stating them in other phraseology. The soil was said to be *exhausted*, and so it was, but not in that indefinite meaning he attached to the word. It was *clover sick*, or *wheat sick*, when these crops gave out. Now when wheat, which requires a large figure of phosphoric acid, having drawn all that substance out of the ground which was in it, declined to grow, and turnips which did not contain but little of that ingredient did well, the rationale seems obvious enough to us.

Sagacious cultivators did not fail to notice another singular state of facts, for which they were wholly at fault for explanation. They saw that a very few pounds to the acre, of some mineral substances augmented the crop to a surprising degree. Pounds of such manure brought off hundred weights of crop, in one place, and was useless in another. Gypsum was an example. In Nova Scotia, where it was brought from, it was so useless on land that the people fancied it actually did mischief. Of course, conjectures were made to account for what seemed a capricious action, and the conclusion generally reached was, that gypsum did not do any good near the sea, and the next part of the philosophy was, that it was the saltness of the air which interfered with it. Unluckily, it proved that it did do good near the sea, in some places, and then it was certain that no salt ever leaves the ocean from evaporation, none in fact, but the spray mechanically driven inland, and lastly, salt, or salt water had not the slightest decomposing or altering effect on gypsum, which is a sulphate of lime.

Now, we may pronounce on examination of half a peck of earth from a man's farm, whether gypsum will do him good or not, with as much certainty as any mathematical fact can be demonstrated.

Or again: take a common case, alas! too common, as any one feels, who travels over what were once the richest regions for the cereal productions of our country, of an exhausted wheat field. Five or six bushels of lime dust sets it again in full action. The former rationale of this unquestioned result was, that certain drugs were *stimulants* to the land, and gave "nature a jog," in the same way that bark and wine and such like cordials and restoratives gave vigor and animation to the worn out and enfeebled human system. The idea that such a minute quantity of material could act as a nutrient, after the soil had been overloaded with the richest dressing of ordinary manures, seemed absurd. It might just as soon have been supposed that a boarder was starving at the best furnished hotel, because he could not get *patés de fois gras*, or some other of the ultimata of the culinary art. Turn to the simple, intelligible explanation of modern science. The ashes of a bushel of wheat is found to be about two pounds in weight. Of this, one half is phosphoric acid, not free or pure until separated by skill, but in a phosphate of lime and potash. Five or six bushels of bone dust, which is composed mostly of phosphates, just furnishes a fair supply after this ratio. Applied in practice, it could not be so equally diffused as that every rootlet of the growing vegetable should have its proper supply, and a due allowance should be made for this circumstance. There were other well ascertained facts which seemed to be explained on this idea of certain substances possessing a stimulant power upon soils. A farmer in certain locations found that the application of lime increased—even doubled his crops. He naturally applied it so long as so happy a result followed, with a liberal hand. After a time, his crops fell off, and even the regular allowance of barnyard manure seemed to fall short of its usual effect. He drew the inference that lime had ruined his lands. So generally was such a train of consequences noted in certain districts in the old country, that it became a common proverb, "that lime enriches the fathers, but impoverishes the sons."

The ready elucidation of such facts by agricultural chemistry, was this: The soil was originally deficient in lime. Its use was followed by an immense augmentation of such products as required a calcareous component, and this increase brought into requisition other essentials, as phosphoric acid, occasioning also the exhaustion of these. When these were all removed, of course the lime was not adequate, and the true medication would be determined by ascertaining what was then wanting and adding it. While the crops were small, the now missing ingredients would have eked out the products through a long series of years, so that if the land has been really impoverished, it is because its best portions have been turned into money.

It is a fortunate circumstance in the aspects of the agricultural future of the world, that those elements of the valuable plants which are most essential, and most liable to be removed by a succession of crops, are such as will be replaced without difficulty. The world will now be searched, as it never has been before, for the magazines in which nature or accident has stored up these precious deposits. In the immense aggregations, some of which are known, and many of which are yet to be discovered, of guano, which is nothing in fact but the residiuum of fish, digested in the stomachs of water fowl, and then allowed to undergo farther changes and chemical recompositions under pressure, heat, and the absence of any solvent rains;—in the excrementitious matters of large cities, formerly turned as noxious and inconvenient refuse into the currents of great rivers or into the tides of the ocean, but now in the process of being most carefully preserved and applied to agricultural uses;—in the natural marl beds, which contain many valuable elementary principles, and lastly in immense ledges of phosphate of lime, which have been discovered and opened in New Jersey, and which doubtless will be found in other regions,—in all these we see abundant resources to supply the consumption of the most precious ingredients. In fact, these elements are not annihilated in the using. The acids and alkalis and other elements which make this year the turnip, then the human being, then the grain, then the horse or the ox, are never lost. There is but a series of rotations, and when it is fully understood that these components are worth saving, all

our arrangements will be made to prevent waste into earth, ocean or air. In many of our best farming establishments, nothing which can enter into vegetable composition is suffered ever to fail of its appointed purpose. Nor are the means to accomplish this complex or costly. Upon the small farm, connected with the institution where I reside, and which contains less than thirty acres under cultivation, the annual average profit, as known by a rigid system of book-keeping, charging everything which goes upon it of labor to its debit, and its products to its credit, at the same rates at which the balance of similar articles is purchased, has proved to be about $1,400 a year, for the last fifteen years. That no exhaustive process is going on, is evident from the fact that the last half has been better than the first half of this period. This result is entirely ascribed to the care with which every ounce of residuum of nearly two hundred and fifty persons, solid and liquid, is returned to reproduce the crops. A judicious system of sewers, of manure cellars, of sheds, where the effects of time may be availed of in decomposition of manures, and in killing the seeds of most weeds which can be thus destroyed, and of adding vegetable growths from the marine marsh, and pulverized gypsum to prevent atmospheric absorption, account for so unusual a degree of success. I speak of it with praise, freely, because the management has been not in mine, but in more experienced and practical hands.

The grand organic and inorganic portions of the earth's crust are not in danger of being rapidly lost, even if no replacements were made. Let any man dig up an average cubic foot of soil in his tillage land, dry it thoroughly, weigh it, then burn out as much as he can, leach what is left and deduct the balance, and he will attain to an approximation of the quantity which is or may be actually food for plants. He will not get the whole, because, as we have seen, vegetables have the power of dissolving and appropriating what is flint or sand or other insoluble element, which can be neither burnt out nor lixiviated. But let him disregard this, and multiply the organic matter he has thus discovered, by the depth of his soil and the number of his acres, and he will be amazed at the millions and millions of pounds of absorbable food for plants he owns. Weighed against corn or potatoes, and he will be

satisfied that he needs no gold mine, if he could transform these elements into marketable products.

That wonderful power in vegetable physiology by which each plant elects the matter, in quantity and kind, which is essential to its existence, cannot now be dwelt upon. The still more curious fact that each part of a plant has this power, is worth an illustration. An early experiment of Mr. Teschmacher on this point, is very interesting and instructive. He knew by many analyses that the grain of wheat had a large proportionate amount of phosphorus, the stalk or straw none. He made a rich compost of mould and manures, from which the phosphates had been carefully eliminated, and divided this into two portions, into one of which the theoretically required proportion or phosphorus was added. The seed wheat was sown in each, and each crop grew with strength and luxuriance. When it had arrived at that point where fructification should commence, that process was never set up in the crop from which the phosphoric elements were omitted, but went on to an entire grain in the other. Crops of wheat with limber stalks, incapable of bearing up the heads have been also grown, or rather started, in peaty soils, where no proper proportion of silex or flint to stiffen the barrel existed, as well as experimentally in preparations in which entirely organic soils were used.

I deem these illustrations so essential in fixing the truth of modern chemistry, that I know I shall be pardoned for adducing a few more instances. Since the mysterious failure of the potato crop, it is well known that one of the best substitutes has been found in the southern sweet potato, or *yam*. Our markets receive vast supplies of this root from Virginia, and indeed its cultivation as far north as Long Island has not proved difficult. The impetus which this demand gave to it, at once called out the energies of the southern planter to increase his crop. It was well known that its best soil was the *cow-penned* tracts where cattle had been kept together. The farmer naturally inferred that cow manure was the true article to dress his soil with, but to his surprise and disappointment this preparation proved all in vain. No crop followed, and no observation of his, enabling him to guess the reason or mend the difficulty, he had only to yield in despair of a remedy.

Prof. Shepard, one of the chemical teachers at the south, analyzed carefully the yam, and found that there were some fourteen ingredients in it. Cow dung had been so often and carefully analyzed by my friend and relative, Dr. Dana, of Lowell, in his finally successful endeavors to supplant the necessity of keeping a large stable of cows for the use of their manure in calico printing, (by ascertaining the precise drug wanted, and obtaining it from cheaper sources,) that nothing could be better known. These analyses demonstrated that cow manure had only five of the fourteen elements of the yam, and that in so insignificant a quantity that the whole amounted to only from one-half to one per cent.

The urine of the animal was next passed under analysis, which, of course, under the cow-penning system was lost in the subjacent soil, but which had been wasted in their methods of manure saving. It was found to contain the identical fourteen elements of the yam, and some others which were not essential. Could any demonstration be more conclusive?

But it is not only in these experiments of the scientific man, or the minor fields of farming, that the truth of our doctrine is made manifest.

The history of the application of guano and that of agricultural chemistry run together. In the worn out and exhausted fields of Europe, under thousands of years of grain cultivation, any person who saw their dark and rich mould turned up to the light, could be in no doubt that there was neither exhaustion nor deficiency in the great organic essentials. Chemistry told him that it was the two or three most limited articles, so far as quantities are regarded, which had been carried off in crop after crop. Chemistry told him that guano had these things ready for use, and on the strength of this theory, verified by an immensity of testimony, guano has already become one of the great articles of the world's commerce, for which fleets are fitted out and wars threatened. Probably over two hundred thousand tons of this article will be carried into England the present year, at a cost of over ten millions of dollars. Those of my audience who recall the recent correspondence between Capt. Jewett and the Secretary of State, touching the great operations now on foot for transporting this article from the Lobos Islands on the coast of Peru, will understand the

magnitude of the prospective calls for this article. In the United States, its cost is about $40 per ton, or two cents per pound, and three hundred and fifty pounds, or seven dollars worth to the acre, will meet any calls for several crops to come. Its pulverulent form makes it of easy application.

The reclaiming of vast territories of worn out lands in Maryland and Virginia, by the application of lime and ashes, although resulting from experiment, verifies chemistry.

But we do not want for an abundance of proofs of the direct chemical medications, so to speak, in which the accidental has no possible admission; we have, perhaps, as many as could have been looked for, considering the infancy of the science and its yet few adepts. In New Jersey, near Morristown, (I am indebted to Col. M. P. Wilder for these illustrations,) it was desired to ascertain whether a crop of *ruta-baga* could be raised. Prof. Mapes found that the soil was deficient in phosphate of lime, potash and some of the organic elements. These were supplied directly, and a crop of fourteen hundred bushels to the acre resulted. A field was examined where the crop of wheat had got down the preceding year to less than fifteen bushels. The wanting elements were supplied and its next year's product was fifty seven. In another example the surface of the soil was exhausted of certain constituents, while the subsoil was found to contain them in abundance. Of course subsoiling and thorough incorporation of both soils was prescribed. Crops of fifteen bushels of corn and sixty bushels of potatoes, were followed by a yield of three hundred and fifty bushels of potatoes and one hundred and fifty bushels of ears of corn. A gentleman in Maryland, whose cornfield, says Mr. Wilder, appeared in the last stages of consumption, applied to a practical chemist for an analysis. It was found to contain the essential ingredients of lime, potash, magnesia, silex, alumina, and what is rarely wanting, organic matter or mould in abundance. One thing was lacking. It was that same phosphoric acid of which nature has furnished but a small supply. An article was purchased, whether bones, guano, or the mineral phosphate of lime, is not mentioned, at an expense of ten dollars per acre, and the result was a crop of twenty-nine bushels of wheat to the acre. I will bring forward but one more of the hundred of striking exemplifications of the direct

application of science to agriculture, which I have found scattered through foreign and our own journals and reports. Certain experiments were directed by the Prussian government to determine how far certain lands were reclaimable by the use of the sewerage of Berlin and Dresden. The territory was of given and uniform sterility, and the experiments were carried through a series of years with the following results :—A crop, which in the natural soil, produced, without manure, three to one from the seed sown, yielded seven to one with cow manure, ten to one with horse dung, and fourteen to one with the city sewerage. Chemical analysis demonstrated that the wanting elements had precisely this ratio to the fertilizers employed.

I am now ready to be met with the question, " Admit all that modern science claims as to the relations of agriculture, how can it benefit us ? Would you advise us to purchase guano, or crushed bones, or make shipments from Mr. Alger's phosphate of lime ledge in New Jersey ?" My reply would be simply this, " I advise nothing." It would be presumption and folly for any man, in the present state of science and agriculture, to go into large experiments, or to arrange his affairs in conformity to what seems an entire prospective revolution in his art. All that I think any one could feel warranted in saying to the practical farmer, whose livelihood depends on the results of his avocation, would be this :—The greatest developments are now in progress in your business, that, perhaps, the world has ever witnessed in any of the leading pursuits of men. It is not extravagant to predict that the changes in the manufacturing arts, or the arts of locomotion and the like, which have burst upon us with such extraordinary suddenness, had no precursors more indicative of great things, than the last fifteen years have shown in your avocation. Watch and be ready for the adoption and taking advantage of the gift, when it is ready to be distributed. The farmers of the old world have already began to reap the blessed fruits of increased crops and easily repaired exhaustion. You now stand in a somewhat different position, but not one in which the prospect is dark or discouraging.

In a prospective look into the effects to result from the application of special manures, there are many circumstances in

which our position as a new country is widely different from the old regions of Europe, where the land has turned off a thousand crops, and has thus become exhausted to an almost uniform degree, that is, so far as the richer and minute ingredients are concerned. In England or Belgium, for example, the cultivated lands have been by a long series of cultivations and rotations brought to a standard, which is perfectly well understood and recognized. Long leases are entered upon with agreements for several series of rotations, with specifications as to the extent of tile underdraining and other improvements, the relative shares landlord and tenant shall bear in the outlay, and the precise condition in which the soil shall be returned, so far as the elementary ingredients of fertility are regarded. In these countries, all the facts touching the exhaustive effects of different crops, the value of manures and the like, are precisely known. The tenant boldly invests thousands of dollars in manures, engages corps of workmen for each department, for the plough-man and the hay-maker, the cattle-herd and the swine-herd know nothing of each others's art, and so little is there of uncertainty or question in the results, that extraordinaries of seasons or political events excepted, a given return for the capital invested may be looked for. A change in the duties of five or ten per cent. would unsettle the arrangements, or even involve in ruin thousands of farmers. In fact, all the agricultural operations of these countries have a more close analogy to commercial or manufacturing business, than to what we know as farming. The sheep husbandry of Vermont, the cotton planting of our Southern States, the flour raising of the West, which have much in them of the characteristics of commerce, are the only kinds of our husbandry similar to the agriculture of Great Britain.

Our system has quite a different set of relations, moral as well as financial. It has its advantages and disadvantages. It provides more fully for the most glorious realization of the husbandman's condition,—independence, living within one's own kingdom—freedom from the hazards of capital borrowed and at stake, of discounts and losses, of tariffs, and ups and downs of prices current. If he cannot grow very rich, he is not likely to fail. Instead of investing his thousands in ma-

nures or machinery or animals or wages, if he is so successful as to have some money in advance, he invests on mortgages, or in banks, or perhaps in railroad shares.

Under our recent date of land cultivation and our systems of loose and imperfect agriculture, we are still drawing annually upon the deposits of food for vegetable life laid up in store, ages before the continent was discovered. As one sweeps along the railroad from Baltimore to Washington, he sees miles and miles of land, once the richest in the world, worn out by repeated cropping and "turned out," as the phrase is, to grow up to scrub oaks and underbrush; or throughout large sections of the "Ancient Dominion," he may notice counties of "old fields," thus sacrificed to maintain a former splendor. But in no part of the hard soil of New England, do we notice the exhaustive processes to have been so palpably completed, although here at the North, it is undeniable, that the skinning process is not always concealed. Most persons no older than a majority of my audience, will recall the glowing accounts of the Genesee flats, brought back by some adventurous neighbor, who had undertaken that long journey, which we now can complete between breakfast and supper. Those rich alluvions, whose fertility was supposed to be beyond diminution, are already deprived of some of their precious elements. The feet after feet of mould, which then was believed would bear crops to all future time, is all there, but its phosphorus or potash or soda has floated to the cities never to return, unless modern science finds the way to replace it.

In the early days of our railroads, as most of us have sad reasons for recollecting, a fearful error was made in what was called "construction account." Everything of improvement, damage or waste, which should have been carried to "repairs," was carried to "construction." Everything went along most prosperously to the eye, until after the whole "construction" had to be closed, and then the hideous chasm of repairs began to open. In our system of farming we have been drawing prodigiously on "construction,"—the idea of repairs has scarcely entered our minds. Our whole system has, in fact, been the most inexact and loose imaginable. Who among us, if asked if his district had reached the highest point of possible cultivation, could reply in the affirmative? Any one would say

that there were farms on each side of him, which were running out, and farms which were improving,—farms adjacent to each other, and originally precisely similar, the same products of which now vary one-half. The range of production among us is too enormously wide, to be consistent with the supposition that there is any recognized *best* system. No one doubts that sixty or seventy bushels of wheat, one hundred and forty or one hundred and fifty bushels of corn, or five or six hundred bushels of potatoes, three or four tons of hay, have been often produced to the acre, and that by the fair and open processes of husbandry. Now if these figures are twice or three times as much as the average crops among us, must it not prove that farming is at best pretty poorly understood? Suppose a cotton mill of equal size and number of hands with another, turned out twice the quantity of yarn or cloth, how long would it be before a general stir and probing of the matter would be made? Yet compare the value of the Indian corn crop with the cotton manufacture, and the latter interest will be found an insignificant topic of investigation.

Few persons can conceive the immense aggregate of money which a small per centage of increase in any of our great agricultural staples will heap up. For example, our Indian corn crop in Massachusetts is not short of two millions of bushels. The man who tells us how to produce ten per cent. more than usual, adds $100,000 to the actual money wealth of the State.

Mr. John Delafield, whom I recollect in my boyhood as the exact and careful cashier of a city bank, where I was in the habit of doing the clerk's business of a mercantile house, and who, obeying the instinct I have adverted to in my opening remarks, retired to cultivate a farm in Seneca County, N. Y., and who is, or lately was, President of the New York State Agricultural Society, in an elaborate and accurate report, drawn up as a man of his habits and pursuits alone is apt to put together statistical tables, demonstrates that in his county, the average wheat crop, fifteen years previous, had got down to ten or twelve bushels to the acre. Year before last, it averaged twenty-five bushels. Why should it not reach fifty bushels, if, as there is abundant proof, it has in the same climate reached sixty and seventy bushels?

I need scarcely say, that most of the great recent improve-

ments in augmenting crops, have been made by men who believe and who put in practice to as great an extent as practicable, the new applications of science to agriculture. In casting an eye over all the publications on the subject made within the past five years, one is convinced that this science has received an unqualified admittance into the minds of almost all the intelligent and devoted friends of husbandry. The grand summing up then of the reply to the inquiry with which I commenced, is this;—Agriculture is now in a rapidly transition state from a tentative art to a true science, and we are on the verge of wonderful results from this progress. The farmer has a right to anticipate a "better day coming," when the labors, the uncertainties, the perplexing mysteries of his calling shall all be lightened, when there shall be a more exact standard of duty accomplished, or of results which are practicable. "Will this good time," you ask, "require that every man shall be a chemist or a philosopher?—for if so," you will say, "we are too old to learn new trades." In reply I would say, that of a thousand master mariners who direct their vessels with accuracy and certainty across the pathless ocean, probably not one understands the principles on which his chronometer, his sextant or his nautical tables, are based. If the easiest table of the navigator was expunged and lost, a convention of all the shipmasters of the Atlantic coast could not replace it. I look for the same analogy in the application of chemistry to agriculture—that is, that our farmers should make the no difficult acquisition of so much science, as will enable them to apply the sextants and tables of their art to its every day course.

WHAT HAS BEEN AND IS DOING FOR THE GENERAL ADVANCEMENT OF AGRICULTURE.

[*Extracts from an Address before the Worcester County Agricultural Society, at its Fair, held on the 23d September*, 1852. By Prof. James J. Mapes, Editor of The Working Farmer.]

The improvements in agriculture during the past half century have been greater than those of any previous time. You will recollect that the iron plough-share was invented but eighty years ago, and that the improvements made upon it have since increased its utility five-fold; that before its invention, the ploughman could disturb but $\frac{1}{20}$ the weight of soil, with the same amount of power, and in the same time, that may now be disturbed; that the slight depths to which he could plough would scarcely bury the parasite plants calculated to annoy his labors. The dry and the wet soil were manured alike, and the sand and clay soil received similar treatment. The subsoil plough and the underdrain were unknown; even the causes of the benefits arising from the plough were but slightly understood.

Among the greatest improvements of the day we may name underdraining and subsoil ploughing, preceded perhaps by deeper disintegration of the soil by the surface plough. The benefits to be derived from deep surface ploughing are too numerous to be only entitled to a passing notice. Even the fine ploughing we have witnessed to-day, although infinitely superior to the present average ploughing of the country, and as compared with the general ploughing of thirty years ago, calculated to improve materially the condition of the farm, is still not so deep and thorough as well-directed experiment has proved to be advisable. Why do we plough at all? Is it not for the purpose of admitting air and moisture to the soil, to permit roots to travel to a greater depth, by loosening particles from each other? Do not soils improve by the action of the atmosphere upon their ultimate particles, and must not this improvement be proportionate to the number of particles acted upon? Can the atmosphere enter soil to as great a depth

when but slightly disintegrated, as when rendered thoroughly pulverulent?

We have all observed that when cold surfaces are presented to the atmosphere, even during the warmer days of summer, that drops of water are condensed upon them. Thus a polished piece of steel, wiped dry before its removal from an ice house, will, on being placed even in the direct rays of the sun, be suddenly covered with drops of water, before its reception of heat causes reëvaporation. Must not, therefore, a soil ploughed to sufficient depth to enable the atmosphere to circulate among the cooler particles, be continually the recipient of moisture from the atmosphere? If the land is dry, must not the missing moisture be resident in the atmosphere above, and will it not be received and retained by deeply disintegrated soils? Do not crops withstand drought on deeply disentegrated soils, while on those ploughed to a less depth they suffer for want of sustenance? The necessity of moisture in the soil, as the solvent of food for plants, must be evident; for rest assured that plants do not, by any mechanical action, disintegrate the ultimate particles of manure; they only enter the plant after solution in water, or after assuming a gaseous form, and enter water in that state. Such solutions then enter the roots of plants, and from their leaves are given off the aqueous portions, leaving the solid residue to complete the organism of the plant.

Why do our fields require reploughing? Is it not because the falling rains lubricate the surfaces of particles, causing the earth to settle to a more compact form? Is it not to overcome the settling of one season, that we plough the soil the next? Does not the oxidation of the surfaces of particles from atmospheric influences, roughen them, and thus prevent them from so readily settling to a compact form?

In the exhibition of to-day, we have witnessed ploughs of a most superior workmanship—surfaces polished to a degree not known to our forefathers—the configuration mathematically in accordance with the requirements of the instrument, and with an equi-libration of the parts so disposed as to place strength where needed, and to insure the greatest degree of lightness. No longer is the ploughman called upon to waste his strength in overcoming the faulty shape of his plough. It

maintains its proper position and its proper depth, simply by causing it to hold its upright position, and therefore the labor of the ploughman is materially lessened. The improved Michigan plough, as offered by Mr. Knox, establishes a new fact in the art of ploughing, namely, that a plough may be so constructed that the upper portion of the soil, by being turned over by a separate share, leaving the separate portion to be elevated by another, consumes less power than the removal of the whole mass by a single share. It gives us all the advantages of trench ploughing, if performed to an equal depth. The portion of soil which has received the combined influences of sun and air, is placed nearest the roots of plants, while another portion requiring such influences is alternated each year, so as to benefit by these actions.

The removal of a less portion of soil at a time, subjects all the particles to less pressure than if the whole mass had to be removed by an amount of power passed through the lower particles alone; and this will prove particularly serviceable in soils charged with clay at a few inches below the immediate surface, for where so much force is applied to this clay, as is consequent upon the removal of the whole mass by power necessarily applied to the lower side, it will cause a compacting of the clay, which, if ploughed when slightly too moist, will require years of cultivation to again restore it to its pulverized state. Many a field has been destroyed by being ploughed when too wet, thereby compacting its clayey portions.

All the rationale I have offered in relation to atmospheric influences as connected with surface ploughing, is equally applicable to subsoil ploughing, and underdraining. The subsoil plough is not intended to elevate the subsoil to the surface, but simply to follow the surface plough propelled by a separate team passing its beam along the bottom of the surface plough-furrow, and disintegrating the subsoil. This it does without elevating it, as it has no mould-board and simply acts like a knife with a lower shoe, raising its load a single inch, and suffering it to fall back in the subsoil cut, loosened and opened. Such treatment, it is true, is of no service in soils surcharged with moisture. Such soils cannot be benefited by subsoil ploughing until after thorough underdraining; for the stagnant condition of water in these cuts

will restore them to their original hardness in a single year, but in properly prepared soils the effects are very different. In such soils as are properly prepared for the subsoil plough the disintegration causes all the inorganic constituents of plants contained in them to be rendered available for the use of crops. First, the atmosphere carries them through the necessary chemical changes and renders them soluble in water; next, in such solution they pass into the roots of plants, which are sure to enter a well divided subsoil, and in this condition they are carried to the surface. The roots of crops left in the ground, by their decay, deposit this accumulated material drawn from the subsoil in the surface soil, in a state ready to perform all necessarily required of it.

During seasons of drought the roots of plants pass down into these subsoil cuts and receive moisture; and during excessive rains the excess of water can pass from the surface into the subsoil, leaving part of the roots at least not drowned out, and it is for these reasons that corn on subsoiled land never shows *curl* in the leaf, and partly for these reasons that subsoiled meadows seldom run out. Another and more important reason for this latter fact is that when the roots of grasses reach a cold, undisintegrated subsoil, the root crown ceases to tiller, and no side roots are projected for the formation of new plants, whereas in subsoiled land, the roots may travel to a much greater depth before any such result can take place. Grain crops, when grown on subsoiled lands, tiller freely, and hence thin sowing of seed on such soils is a good practice. In wheat growing districts the saving of seed amounts to a profit.

Underdraining, when properly pursued, is still more important. Millions of acres of valueless lands have been restored by this practice, and pent up quantities of materials of which plants are formed, have been rendered available to the farmer; nor must it be conceived that underdraining is useful in swampy lands alone. The very hill-tops may sometimes be improved by thorough underdraining. The admission of atmosphere through these drains permits its heat, which always rises, to find its way from the underdrains through the whole depth of soil above it; for heat, although difficult to descend, rises with ease, and a properly constructed underdrain is never without a current of air, and that portion entering during the day time from the influence of the sun previously exerted

upon it cannot but be warmer than the supernatant soil. Properly underdrained fields are also early. The absence of an excess of water prevents the accumulation of ice through the soil and leaves it ready for the plough and in a less compacted form than soils not so treated.

The underdraining of English farms, and the action of the British government in relation to the profit consequent upon underdrains, settles all doubt on this question. Long practice has shown that most farms, when properly underdrained, give an excess of produce, as compared with their previous production, which enables the farmer to pay ten per cent. of the cost of underdraining each year from the increased products, and therefore, at the end of a few years he finds his farm increased ten per cent. in value, or more, with the cost of improvement paid for, by the excess of crops during those few years. Indeed, some of the English statesmen have advanced the doctrine that although but a portion of the farms are as yet underdrained, still the whole agricultural product has been increased ten per cent. by this improvement alone. From these causes the government have each year set apart a large fund to be loaned for draining mortgages, and these mortgages are only active beyond a valuation previously made of the farm. The owner is required to pay five per cent. of the principal annually, until all the mortgage is discharged by such payments; and should he fail to make these payments, and the mortgage should be foreclosed, the government can only appeal to the increased value, beyond the value fixed before the underdrains, for their payment; and still no case has yet occurred where this increased value was not entirely sufficient to discharge the debt.

I should like to dwell more specially on underdraining and subsoil ploughing, as applied to this country, and particularly to this district, if my time would admit.

To recur to the importance of fairs. Perhaps no set of citizens are less migratory than farmers. They remain at home, their vocations seldom permitting them to leave their business, and hence we find modes of operating pursued in one township scarcely known to any other. Many farmers in different parts of the country raise one hundred bushels shelled corn per acre, and still thousands of farmers, occupying land of similar quality, continue to be satisfied with a product of one-third that

amount. Should the farmer who raises thirty-three bushels per acre have an opportunity of meeting him who raises the hundred bushels, this difference could not long exist; and fairs are the means by which farmers may instruct and consult each other.

We find land at Harsymus, near New York, rented to market gardeners at $75 per acre per annum, and still these gardeners find it profitable. Land of equal quality may readily be met with in the vicinity of Worcester, which, at an expense beyond its present value not exceeding $20 per acre, could be similarly corrected, and still such improvement is not appealed to. Visit the fairs, gentlemen, where you may meet these Harsymus gardeners, and profit by their example.

In some parts of the country I have visited fairs where almost every vegetable exhibited was a hybrid and not true to its kind. All this might be corrected if farmers would visit distant fairs where such hybridations do not exist and procure their seeds. This should be the duty of every agricultural society. Small quantities of pure seed may be so readily procured and at so little expense that they should be introduced into every neighborhood. All kinds of fruit may be improved and put in cultivation by the exchange of scions, grafts and cuttings at fairs, and those who have fruits of superior quality should be invited to bring with them and distribute for the use of others the means of perpetuating them.

New implements may be seen at fairs. Labor-saving machines may be there found and purchased. Addresses are heard from those of accredited knowledge, and indeed it would be difficult to find a farmer who has ever visited a fair without returning home with a determination in some way to improve the culture of his farm. A crying evil among our farmers is their fondness to enter into mercantile projects as soon as they have spare profits to so invest. I have known many a farmer who loaned out his capital at six per cent., who could have used it on his own farm at a profit of twelve per cent. Too often the more active minded sons of farmers are sent into the cities to become merchants, or as students of the learned professions, while the supposed drone of the family is kept at home to continue the working of the farm on antiquated principles, and he very often in after life has to receive back his beggared brethren

into his ill-conducted asylum. If the farmer will use the same energy in the improvements of his processes as in the investments of his spare funds, he will find that he has a noble art, capable of calling into action the best talents of his smartest son. All the sciences are the adjuncts of agriculture, and the importance of agriculture as a public interest is beyond all others. The merchant is but the factor of the farmer. Cities are built on the commissions earned by their inhabitants acting as the brokers of the farmers, receiving and finding market for his products and paying him with those of other countries in exchange. The wealth of those cities is constituted of the mere commissions consequent upon such exchanges, and they owe their importance simply to the concentration of these minor points of national wealth as compared with the greater amount of wealth diffused through the agricultural community. The day is fast arriving when an educated class of farmers will, in our halls of legislation, claim as their right, a fair percentage at least of the public treasury, of which they contribute nine-tenths, for the advancement of agriculture as an art, and we shall not long be contented with the empty compliments of legislators who have forgotten the recommendation of the IMMORTAL Washington for the establishment of a home department of agriculture, and who now amuse us with vague promises which they have no intention of fulfilling.

Before leaving the subject of the general importance of agriculture, I would remark, that one per cent. upon the agricultural crops of this year, would be greater than the total amount of income of our government from imports, and every other source during the last four years. Our Indian corn crop alone will reach 700,000,000 of bushels, worth, at export value, $350,000,000. Our hay crop exceeds this amount, and indeed we have many crops which far exceed in value the much talked of cotton. It owes its importance, as compared to the others, to the fact of meeting so large an export, thus registering its value at our custom houses, and causing it to be continually kept before the public eye. Who among those at your ploughing match to-day can doubt that if the government had offered a premium of $10,000 for the best improvement in the plough within any consecutive five years, that it would have called into action mechanical talent connected with practical experi-

ence which would have produced a plough capable of increasing our whole production, either in the economy of its use or greater ability of action, the one per cent. above referred to, but the fact that this one per cent. would not find its way to the public treasury causes our representatives to forget that they are the servants of the people, and not the advocates of the federal government, abstractedly a distinct body. Under the sanction of fashion and scientific bedazzlement, they have appropriated a much larger sum for improvements in the telescope, as if the examination of the surfaces of other planets was more important than a close understanding of the qualities of our own.

I have been requested in this address to refer particularly to the cultivation of the Peach. It is true that New England is not as well positioned in climate for the cultivation of the peach as New Jersey, Delaware and some other States, and hence the greater necessity for more exact cultivation, for with it this crop may be grown in sufficient quantities for home consumption and to prevent the necessity of import which is now a large item in most of the Eastern States. The peach tree where native (Persian) is of slow growth, producing a hard texture and firm wood. With us it is an exotic, and as such should be treated. The ordinary mode of raising peach trees is to give them little or no care. They are taken from the nursery rows in a deformed shape, consequent upon growing in a crowded nursery row, and placed without alteration or amendment where they are intended to remain, usually in holes only sufficiently large to admit the roots, with the assistance occasionally of an uncouth pushing of the foot, planted at a greater depth than that at which they grew, and suffered to put out new growth from the ends of a few straggling branches; so that, by the time they bear fruit, its weight on the extreme end of long limbs, causes them to bend so as to break off at the tree, or by bending to close the capillary tubes on the lower side of each branch, so as to prevent the flow of pabulum for fruit making. After three or four years of struggling they die, producing, in the interim, fruit of inferior quality and of inconsiderable quantity.

All this may be prevented by judicious treatment. In placing the pit in the ground, don't bury, but insert, it, point down-

ward, in the nursery row, so that its soft end shall be prepared to receive moisture. The freezing of the first winter will split this shell, causing the tree to commence its growth with its germ in the right position, and with its cotyledons at or above the surface of the ground. At the proper season it may be budded, and after the growth of this bud the original stalk above the bud may be removed. When at sufficient age for removing from the nursery, take it up with care without breaking the roots. Do not *pull* it up so as to disengage a large number of its fibres, leaving them in the ground. Remove the branches, leaving it as a simple staff. The reasons for this are numerous. While in the nursery row, it will be found to form more branches toward the next rows than toward the next trees in the same row—there being most room and air between the rows, therefore the tree is out of balance. In placing it in its new location with all the branches on, an immense surface would be left for the evaporation of moisture before the root is established for its reception, and an unhealthy growth will ensue; therefore, all these branches should be removed, cut close to the tree, and with a very sharp knife.

In placing the tree in its new location, dig a *large, deep hole*, and do not return to this hole the subsoil removed from it, but fill it with the surface soil from its immediate vicinity, replacing this surface soil with the subsoil taken from the hole, thus permitting it to receive the influences of sun and air, and to become surface soil by time. This hole should be three feet in diameter and four feet deep. Do not plunge the tree up and down when putting in the soil, nor enter it any deeper than when growing in the nursery row. Indeed it should be one inch higher out of the ground to compensate for the settling of the soil during the first season. A stream of water passed down its trunk will arrange the soil among its roots more completely than any other means. If the upper roots near the tree be covered with soil, or the soil be piled up for an inch or two around the trunk, new roots will start from the outer surface, and old ones will die, causing the pith in the centre of the tree, for a few inches above the surface of the ground, to turn brown. For each old root that dies some limb will decay, and the peach worm will enter at the soft spots in the bark near the root crown. When the earth is kept away from the trunk, and

if the tree is not permitted to sink into the soil below its natural depth, these difficulties will not occur, and the peach worm will not be so apt to annoy it. During the first season, new branches will put forth, fairly balanced on all sides of the tree. The following spring these branches should be shortened in, cutting next to a wood bud, and never next to a fruit bud, removing two-thirds of the new growth. This will cause the new puttings-forth to be nearer the tree, and greater in number, so that, instead of a few straggling branches shading the smaller ones and causing them to die out for want of air and sun, you will have a number of branches of equal length with each other, and of double thickness. Continue this practice each year, and by the end of the third year you may have a round-headed tree resembling the shape of a horse-chestnut tree, and bearing its fruit on branches incapable of being bent by its weight, and which will continue to bear fruit for many years, provided the soil be annually disturbed as with other exotics. The peach tree will not bear fine fruit without continued cultivation. Original trees, raised from the pit, and accidentally producing good kinds, last longer than those which are budded, simply because they are not placed too deeply in the ground. Nature plants the pits correctly when they fall from the tree, and therefore the cotyledons are not covered up as with imperfectly transplanted trees for the particular accommodation of the peach worm. How often do we find peach trees near stable windows, where the ends of the limbs are bitten off by horses or cattle, bearing superior fruit; and how often do we find similar instances of fruit-bearing with peach trees, a large proportion of which has been removed by accident, thus in part taking place of the shortening-in process we have recommended.

The treatment recommended for the peach, is equally applicable to the nectarine and apricot, but should never be appealed to for other fruits.

Every practical farmer is aware of the necessity of a proper succession of crops, and this arises from the fact that plants receive from the soil whatever they find in solution. The aqueous portions so received may contain the proper pabulum for the creation of the new organism, and in addition thereto certain materials which are not required by, and are offensive

to the new growth. These latter ingredients are discharged at the roots as *excrementitious matter*, and these processes are continually going on.

It may be thus understood. If a cabbage be suddenly pulled from the soil and the dirt washed from the surface of its stem, and it then be plunged into a jar of chemically pure water, the following phenomena will take place. After a short time the water will become milky, and in a few hours small flocculent particles will be seen to descend to the bottom until, if the cabbage be of ordinary size, the jar six inches in diameter, a deposit of one inch depth of semi-starch-like consistency will occur. If this be poured around the roots of another cabbage it will kill it, if poured around a beet, carrot, or parsnip, it will materially increase its growth. Thus it will be seen that the excrementitious matter of one plant is pabulum to another, and hence the necessity for rotation of crops, a plant not being able to grow in the presence of an excess of material unfriendly to, or not required by, its organism.

Some crops do not throw off much excrementitious matter. Thus the onion beds of Wethersfield have in some instances been grown upon the same soil for a hundred successive years. The farmer, therefore, in choosing the crops which should follow each other, can readily decide upon them by reference to their analysis, and avoid a repetition which would embrace similar ultimate constituents.

A much more important branch for the consideration of the farmer is the sub-succession of crops. This may be said to apply more particularly to the gardener, but is fully worthy the farmer's best consideration. Several crops may be raised from the same soil in the same year, and despite this fact many are contented with a crop of early cabbages, leaving the ground in July, permitting it to be useless for the plants of the season; or of early potatoes dug in July or August, in either of which cases turnips might have been raised, Caulo Rapas, late cabbage, and a variety of other crops. Gardeners, by judicious management, have some twenty or thirty different four-course rotations for the single season. Thus let us suppose a crop of early potatoes, planted in early spring in hills at the usual distance apart; thirty days before these potatoes are ripe a cabbage plant may be set out between each four hills, making the

same number of cabbage plants as there are hills—just as the white spots of a checker-board are each between four black ones, and still are of the same number. Cabbages, during the first thirty days of their growth, require moisture at the roots, and in this low spot they receive it. Then also to encourage them to strike root, they should be partially shaded. This desideratum is supplied by the potato vine or top. During the last thirty days' growth of the potato the top gradually dies down, thus slowly and surely acclimating the cabbage by removing the cause of shade. The digging of the potatoes proves thorough cultivation to the babbage, such as could not be afforded except in the gathering of a crop. Double rows of white globe turnips may then be substituted for the potatoes in each direction with a crop of lettuce or radishes between, and thus four crops in the same season may be obtained. The cultivation or stirring of the ground for all these crops, so as to fairly compensate for the extra amount of manure which should previously be applied where so large a product is intended. Our time will not permit of an enumeration of all these sub-successions, but the example given may prove sufficient to induce inquiry.

The raising of root crops is equally important to the farmer; it enables him to keep more cattle and to supply himself with larger amounts of manure for spring use. Many of these root crops tend to clean the soil, and some of them, too, act as mulch for the surface of ground during winter. Turnips do not exhaust land materially. Slight dressings of phosphate of lime will insure a full crop. They are easily reared, requiring but little labor and attention, and would be found useful to insure a variety of food for cattle, milch cows, &c. The same value of food composed of a variety will produce more milk or more beef than when one kind only is used. Beets are also extremely useful as food for cattle and milch cows. Parsnips may be raised in ground not so well suited to the growth of other crops. The most valuable of the root crops, however, is the carrot; for while the amount raised is as large as that of the beet, and nearly equal to that of the turnip, its value is many times as great for most purposes. Cows fed during the winter in part on carrots, will furnish large quantities of milk, which will yield butter of as good a color and quality as when

fed from clover in May. Beef cattle are readily and rapidly fattened when carrots form part of their food, while horses will accept of carrots in place of half their usual quantity of oats with benefit to themselves. No horse is troubled with heaves when carrots form part of his food. A bushel of oats and a bushel of carrots are more useful to the horse than two bushels of oats, not because the carrot contains as much nutriment, but because it enables the horse to digest the oats and appropriate its ultimates for flesh making, the formation of bone, &c. When a horse is fed in part on carrots, shells of oats and pieces of cut hay will not be found in his dung, nor will it contain a large amount of starch, causing it to fire-fang, as when oats are used without carrots.

The feeding of swine may be materially improved by proper economy in the preparation of the food. It has been well settled that much less than half the quantity of cooked corn will create one hundred weight of pork to what would be required if not so treated. The Hon. H. L. Ellsworth has settled this fact by a comparative experiment with several hundred hogs. Mr. P. Mason, of Somerville, has also published very accurate experiments on this subject. He found that he could create pork for four and a half cents per pound by the use of cooked food, and when fed with the same class of food in the raw state, the pork would cost ten cents per lb. in his locality.

The use of root crops in feeding cattle has been fairly settled by the English agriculturist, and Mr. James Campbell, of Weston, who is well known as an exact experimenter among American farmers has published accurate results in the Working Farmer of a course of experiments on feeding cattle with and without the assistance of root crops, by which it is clearly shown that a much greater profit is consequent upon their judicious use. Mr. Campbell has also illustrated in an experiment in subsoiling for corn, that on the subsoiled portions eighty-five ears filled a basket requiring one hundred and fifteen ears from the un-subsoiled portions, the same amount of manure and of the same kinds, having been used in both cases.

The value of agricultural reports, issued by state and county agricultural societies and consequent upon the holding of fairs, is of material value to the farming interest. These collate a mass of information within the more immediate circle of each

farmer's acquaintance, and within reach of his own personal investigation, which would with difficulty be arrived at by any other means. The plan adopted by your State, in common with many others, has been productive of much good. Many of these reports contain essays on agriculture of extreme value. Thus the essays by Professor Norton, published in the New York State Report, may be classed among the very best papers extant on chemistry as applied to agriculture, and among many of my correspondents I have found quotations from his essay, and giving evidence of having applied the truths there learned in the principal operation of their farms. Addresses of a practical kind are also published, and these help to make up a compendium of all the current improvements of the day, placing them before practical men for indorsement or refutation.

FACTS IN RELATION TO THE GERMINATION AND GROWTH OF INDIAN CORN.

[*Extracts from an Address Delivered at the last Fair of the Hampshire, Franklin and Hampden Agricultural Society, October* 7, 1852. By JOHN STANTON GOULD, of Hudson, N. Y.]

The first point in connection with germination, is, that the soil shall be of the proper temperature. Every different plant has its germinating temperature, or rather a *range* of temperature, peculiar to itself. Thus, wheat cannot germinate except between 45° and 95°. Corn will not vegetate unless the temperature of the soil attains to 55°, and at a temperature higher than 110° it equally refuses to germinate. This is a matter of great practical importance, the neglect of which diminishes the production of corn far more than most farmers have ever dreamed of. The chit alone, contains the germ; all other portions of the kernel are mere reservoirs of nutriment for the germ, until it is enabled to draw its sustenance from other sources. Now if the seed is deposited in the soil at a lower temperature than 55°, we have seen that there can be no germination; meanwhile, if cold, wet weather continues

some time after planting, a chemical change is produced, the corneous and starchy portions are decomposed and dissolved by the rain water, and are diffused through the soil; hence when the soil attains to a temperature sufficiently elevated to start the germ into activity, the plumulus and the radicle show themselves, but finding no nourishment to support them, they wither and die. This is a great evil, because the labor and expense of replanting must be incurred, and this process must be performed so late in the season, that the risk of frost before ripening is very much increased. But this is not the greatest evil; it sometimes happens that the soil attains to 55° before the corneous and starchy portions are *wholly* decomposed. In this case, there is just enough of these substances left to give the plant vitality, and no more. It lives through a feeble and morbid existence, but it never recovers its vigor; the crop is deficient in quantity and quality, and proves unremunerative to the cultivator. Much of the damage which is supposed to arise from planting in the wrong time of the moon, is really due to planting when the soil is at the wrong temperature, and if the time ever arrives when the average crop of the country is equal to what our premium crops now are, it must be when every farmer owns a thermometer and knows how to use it.

The second point essential to germination is *moisture.*

It is a very general law of chemical affinity, that when two substances combine chemically, one of them must be in a fluid state. Since a very active play of chemical affinities takes place as soon as germination commences, it follows that the substances enveloped in the grain, which are the objects of these affinities, must have access to a sufficient amount of water for their solution and to act as a vehicle for their distribution through the tender vessels of the germ.

The third point to be observed in the germination of corn is *seclusion from light.* You all know that light is a compound body, that can be separated into seven distinct colors, by means of a prism; but it may not be known to some of you, that there are other distinct ingredients or agencies in the solar ray, separate and distinct from its light-giving properties: one of these is the heat-giving ray; the other the chemical ray, by virtue of which the chemical changes due to light are produced in the growing plant. It has been found, by repeated

experiments, that the relative amount of these rays vary with the changes of the seasons. In the spring, a solar beam contains the greatest proportion of chemical rays; in summer the greatest proportion of light, and in autumn the greatest proportion of heat. The action of these solar rays is adverse to germination, because they prevent the formation of diastase, which, as we shall see, is indispensable in the early stages of the plant.

The fourth point to be noticed in the process of germination is *access of atmospheric air*. It is impossible for germination to go on in the absence of air, even when all the other conditions of warmth, moisture, and seclusion from light are the most favorable. Thus we see seeds, which have been deposited deep in the ground for years without germination, have sprouted readily when brought to the surface and allowed to come in contact with the atmosphere.

If a few kernels of corn are made to germinate under an inverted tumbler, it is found that though there is no material change in the bulk of the air contained in it, yet there has been a most marked change in its chemical composition. The oxygen is absorbed and its bulk is replaced by carbonic acid. This proves that the absorption of oxygen is essential to germination, and accounts for the necessity for the presence of air, which is the great reservoir of this element. You are aware that after the plant begins to unfold its leaves, and to derive its whole nourishment from the soil and the atmosphere, it gives out oxygen and absorbs carbonic acid, as long as it is acted on by the chemical solar ray; but when that is withdrawn, and the earth is covered with the mantle of night, it entirely reverses its operations; it then gives out carbonic acid and absorbs oxygen. Now, as we have seen, that the germinating plant must perform the latter process, and that the chemical portion of the solar ray induces an expulsion of oxygen, we see an additional reason for guarding our seeds from the intrusion of light.

I trust I shall not be accused of trifling with your time in dwelling so long on these matters, apparently so trivial. I do not so consider them. Much of the vigor of a plant and the amount of its produce depend upon its germination. If this is effected under circumstances the most favorable to its progress,

the plant will, throughout the whole of its growth, be superior to another plant which has germinated under less favorable circumstances, even though the latter be favored with a soil equally rich, and an atmosphere equally genial. It is impossible to lay down any rules for planting corn, which will insure its germination most advantageously. Keeping the principles just adverted to in view, we must determine the proper mode of conforming to them by repeated and careful experiments in each locality. In loose sandy soils, where the atmosphere can readily permeate to a considerable depth, it is best to plant deep in order to increase the moisture; but in stiff soils, the planting should be as shallow as is consistent with the perfect exclusion of light.

Let me once more repeat, that if the average crop of corn in this State is ever to be raised to what is now the maximum production, much more attention must be paid to the germination of the seed than has ever been given before.

I have already stated that the germ of the corn first develops itself in the plumule and the radicle. These consist merely of vessels composed of the cellular fibre of Payen, which is a substance, intermediate between starch and woody fibre; no true wood is developed until the first true leaves make their appearance.

The first chemical transformation effected in the seed as nourishment for the expanding germ, is the conversion of the starchy portion into vinegar, and the nitrogenous portion into diastase. I do not know what function is performed by vinegar, nor how it nourishes the plant, but the function of diastase has been pretty well ascertained by chemists. It possesses the property first of making starch soluble in water. You know the vessels of the germ are so minute, that a body of the magnitude of a grain of starch, merely mechanically suspended in water, would choke them up, and all circulation, and consequently all life, would be destroyed. Since the starch of the kernel is the food provided by nature for the sustenance of the young plant, until it is provided with organs by which it can procure its food from the earth and the atmosphere, we are able to understand the value of the provision by which diastase is formed at the very base of the germ. It dissolves the starch of the seed, and thus enables it to circulate through the

delicate vessels of the germ. It does more than this; after having effected the solution of the starch, it converts it gradually into sugar, which is essential to the existence of the young plant. When the starch of the kernel is wholly converted into sugar, the first true leaves and the first true roots appear, and henceforth it is fitted to draw its nourishment from other sources; it has entered on an independent existence.

In the rapid sketch of the history of the growth of the corn plant which I have laid before you, I stated that in eight days after planting, the weight of the plants above the ground on an acre, was 27½ lbs. In forty-five days afterwards, their weight was 5,139 lbs., and in ninety-one days after this, their weight was 31,389 lbs. We perceive from these facts, that there has been an average daily addition to the weight of the plants of 231 lbs.

It is a question of the greatest importance in practical agriculture, How can plants be made to take up and assimilate the greatest possible amount of food? We cannot answer this question intelligently, before we have learned the substances which enter into the composition of the corn plant.

When the leaves of the plants first appear, 89.6 per cent. of their weight is water, 10.4 per cent. is dry matter, and of this dry matter 13 per cent. is ash or inorganic matter. Hence the plants on an acre, at the first formation of the leaves, contain 27 lbs. of water, 3.13 lbs. dry matter, and nearly half a pound of ash. When the plants are in full flower, 87 per cent. of their weight is water, 12.92 per cent. is dry matter, the ash constituting 8.82 per cent. of the dry matter. When the corn is ripe, 61.20 per cent. of the weight of the plant is water, 38.79 per cent. is dry matter, and the ash is 4.118 per cent. of the dry matter; consequently the weight of the plants on an acre is made up of 21,077 lbs. of water, 13,361 lbs. of dry matter, and 549 lbs. of ash. The relative proportions of water and dry matter remain very nearly the same in all the various stages of the growth of the plant, until after the period of flowering; from thence the water regularly diminishes up to the period of perfect ripeness. Something may be done by the farmer to furnish this large amount of water, but his main business is with the supply of the dry matter. This dry matter is composed of two distinct substances, one of which may

be destroyed by fire. The other is indestructible by fire. The destructible portion is called the organic; the indestructible is called the inorganic, and is contained in the ash of the plant.

The greatest relative amount of inorganic matter is about the tenth day after the first appearance of the plant. From the period of flowering the relative amount diminishes rapidly until the plant is fully ripe, but it must be remembered, that this diminution is *only relative*. The *absolute* weight continues to increase through every period of its growth.

The *whole* of the inorganic portion of the plant is derived from the soil. If not naturally contained in it, the art and labor of the husbandman is called in requsition to supply it. A portion of the organic matter is derived from the atmosphere. Some theorists maintain that the whole of it is supplied from this source, while others concur with the whole body of practical farmers, that a portion of this supply is drawn from the earth. It is very certain that corn invariably flourishes best where the soil is rich in substances which contain the elements of organic matter.

Organic matter is made up of carbon, oxygen, hydrogen and nitrogen. The air is composed of oxygen and nitrogen. Water is a compound of oxygen and hydrogen.

A small quantity (say one gallon in 2,500) of carbonic acid gas is diffused through the atmosphere, but not chemically united with it, and although there is only one gallon of this gas in 2,500 gallons of air, this alone forms an ample supply for all the purposes of vegetation. The source of the supply of nitrogen to plants was not ascertained before Liebig's celebrated discovery of the existence of ammonia in the air, which is washed down by every shower of rain, and thus brought into direct contact with the organs of the plant.

All organic substances contained in corn are formed by a union of three or more of these substances. Thus sugar, starch, and gum, are formed from the union of hydrogen, oxygen, and carbon, in different proportions. Gluten, albumen, and caseine, contain these substances, with the addition of nitrogen.

It follows, therefore, that all these compounds *may* derive their elements from the atmosphere, although in practise they obtain a portion from the soil.

The amount of inorganic matter taken from an acre of soil by the small white flint corn, whose history we have been describing, is 881.85 lbs.; which is made up of the substances following: Silicic acid 210.14 lbs., phosphates of iron, lime, and magnesia, 94.58 lbs., potash 64.71 lbs., soda 63 lbs, lime 15.69 lbs., magnesia 9.69 lbs., chlorine 19.62 lbs., sulphuric acid 30.34 lbs.

Of organic matter, there are taken from one acre 22,546 lbs. Of this amount, 2,892 lbs. consists of sugar and extract, 5,139 lbs. of starch, which is found solely in the kernel, 15 lbs. of rosin, found only in the cob, 11,526 lbs. of fibre, 817 lbs. of albumen, 396 lbs. of caseine, 143 lbs. of zein, found only in the kernel, 10.27 lbs. of dextrine or gum, 312 lbs. oil, found only in the kernel, 171¾ lbs. chlorophyl and wax, and 420 lbs. of glutinous matter.

Of this 22,546 lbs. of organic matter removed from the soil, 8,008 lbs. is taken off by the kernels, leaving 14,538 lbs. for the rest of the plant. Since these portions are most usually retained on the farm, and find their way back to the soil in the shape of manure, the 8,008 lbs. carried off by the kernels is all that needs to be provided from foreign sources, to keep up the fertility of the soil.

Of the 881 lbs. of inorganic matter removed from an acre of soil by a crop of the small white flint variety of corn, 99 lbs. are contained in the kernels, leaving 782 lbs. in the remainder of the crop, which is restored to the soil in the form of manure.

We have seen from the preceding chemical and physiological history of the corn plant, that the following conditions are essential to its growth, viz.: 1st, heat; 2d, moisture; 3d, air; 4th, light; 5th, a supply of 22,546 lbs. of organic and 881 lbs. of inorganic matter upon each acre.

Let us consider how far the skill and labor of the farmer can be brought to bear upon the improvement of the crop under each of these points.

I. The farmer may secure an increased temperature in various ways: 1st, by aspect. It is found that on first rising from the sea-shore, the air becomes one degree colder for every 200 feet of perpendicular ascent, and altogether 50 degrees colder in rising 15,000 feet. Lands lying nearest to the level of the sea enjoy the highest temperature. Again, lands hav-

ing a southern aspect are much warmer than those sloping towards the north. By selecting southern slopes, we may, even here, obtain the climate of South Carolina. Much of the success of a New England farmer, in raising corn profitably, will depend on the judicious selection of those portions of his farm where the highest temperature can be obtained. The coldest portions may be devoted to oats, the intermediate portions to wheat, barley and potatoes; but corn loves a high temperature, and should always be planted where this condition can be most perfectly fulfilled.

2d. The temperature of the soil may also be increased by thorough drainage. While water remains in the soil, evaporation goes on at all temperatures. You know that when water passes from a liquid state to vapor, it is because the heat absorbed by the water overcomes the mutual attraction of its particles, driving them asunder until they become vapor. No portion of the heat thus employed is sensible to the thermometer; it is therefore called *latent* heat. It is found by experiment, that just 1,000 times as much heat is rendered latent by the vaporization of water, as would raise the temperature of the liquid water just one degree. It is easy to see that a constant evaporation of the stagnant water, resting on the impervious subsoil, must carry off an enormous amount of sensible heat, or, in other words, it must keep the surface too cold for the profitable growth of Indian corn. Underdraining and subsoil ploughing will enable the farmer to plant from a week to a fortnight earlier, germination is effected more perfectly, the roots have a greater range for procuring food, it is less affected by drought, and insures a temperature better fitted to promote the chemical transformations necessary for the tissues of the plant, than could be obtained while the water rests on the subsoil.

3d. There is another mode of increasing the temperature of a soil, which may be practised under certain circumstances, that is, by changing the color of the soil. Black surfaces absorb much more heat than light colors, as is well known to every school boy. If powdered charcoal is sprinkled on a cold soil, by absorbing the sun's rays it conveys much heat to the soil, besides operating usefully as a manure.

II. A sufficient amount of moisture is essential to the

growth of corn. This has been shown from the great amount of water existing in the plant. It is also necessary to dissolve the saline and organic constituents of the soil, because they cannot enter into the plant except in a state of solution.

Moisture may be secured for the plant, 1st, by irrigation. This process would be too expensive to be profitable, except in a very few localities, and I therefore pass over it with the simple allusion to its possibility. 2d. Moisture may be increased by deep ploughing, subsoiling, and thorough pulverization. By deep ploughing and subsoiling, the roots have access to a stratum less affected by evaporation, and which therefore is more abundantly supplied with moisture. By thorough pulverization, we enable the moisture from below to pass upward by capillary attraction. More dew also is deposited on a well pulverized surface than on a hard one.

III. Access of air is also essential to the growth of corn. No matter how rich a soil may be in vegetable matter, it cannot possibly yield any food to the crop in the absence of air, because it can only be absorbed by the plant in a state of transformation induced by its combination with oxygen. Other things being equal, those soils bear the greatest crops of corn which are most readily permeated by air.

"In a soil to which the air has no access, or at most but very little, the remains of animals and vegetables do not decay, for they can only do so when freely supplied with oxygen, but they undergo putrefaction, for which air is present in sufficient quantity. Putrefaction is known to be a most powerful deoxidizing process, the influence of which extends to all surrounding bodies, even to the roots and the plants themselves. All substances from which oxygen can be extracted yield it to putrefying bodies; yellow oxide of iron passes into the state of black oxide, sulphate of iron into sulphuret of iron, &c.

"The frequent renewal of air, especially its contact with alkaline metallic oxides, the ashes of brown coal, burnt lime or limestone, change the putrefaction of its organic constituents into a pure process of oxidation; and from the moment at which all the organic matter existing in a soil enters into a state of oxidation or decay, its fertility is increased. The oxygen is no longer employed for the conversion of the brown, soluble matter, into the insoluble coal of humus, but serves for

the production of carbonic acid," from which, as we have already shown, a great proportion of the organic portion of the plant is derived.

The access of air to the roots of the plant may be promoted by the farmer in various ways. Among these, the first in importance is thorough pulverization of the soil by the plough. A difference in the crop of from 30 to 50 per cent. has been realized from precisely similar soils, in consequence of the greater thoroughness with which this process has been performed. Its importance is acknowledged by every farmer, yet it is astonishing how carelessly this operation is performed in the great majority of cases.

In England, the furrows are laid so straight that you would think the pencil rather than the plough had traced them, and every portion of the soil is carefully brought under the action of the share. In Flanders, this necessity for thorough pulverization is so fully appreciated, that the spade is brought into requisition, and every spade full turned over is thoroughly beaten to powder. This cannot be done in our country, so high is the price of labor, but vast improvement may be effected without increase of cost, by a more careful training of our ploughmen and a more careful selection of our ploughs.

Having been one of the judges at the great trials of ploughs at Albany, by the New York Agricultural Society, I had an opportunity which falls to the lot of few farmers, of seeing the wide difference with respect to pulverization in the action of different implements. Over forty ploughs were entered for competition, and a fortnight was spent in testing them, under every possible variety of conditions. Some ploughs would turn the furrow over very handsomely, but when turned, it was as hard and unyielding as the land which had not been ploughed, and in fact it was in a condition very little better for the production of corn than the original green sward itself; while other implements reduced it to powder so fine, that a common hand rake would render it fit for a garden bed. This was especially the case with those manufactured by Prouty & Mears, of Boston, which produced a more thorough pulverization, with less expenditure of power, than any others. Soils prepared by their ploughs, and especially their sod and subsoil plough, were in a condition to afford the freest access of air,

which, entering into combination with the vegetable matter contained in it, affords an abundant supply of food to the plant, in a condition most favorable for assimilation.

If we desire to raise our average crops to the standard of premium crops, and thus quadruple the annual production, we must have better ploughmen and the best of ploughs.

IV. Free exposure to the light is necessary for the production of maximum crops of corn.

The corn plant is filled with capillary tubes; through these the moisture of the soil, holding in solution the various organic and inorganic matters, are sucked up by the spongeoles of the root, and conveyed to the *upper* surface of the leaves. Here an entire change is effected in the chemical character of the solution by the action of the solar ray; under the influence of this potent agency, the carbonic acid is deprived of its oxygen, while its carbon unites with the elements of water to form starch, sugar, gum and woody fibre; at the same time a play of affinities is induced among the inorganic compounds, by which the elements of the one are variously compounded with the elements of the other, changing entirely their previous chemical characters. After these changes are effected, the sap passes to the *under* side of the leaf, and from thence is diffused to the other portions of the plant, each of which derives from it the kind of food suited to their several necessities, until it is robbed of all its useful portions, when it is excreted again from the roots, after having performed the whole circuit of the plant. This chemical action of light upon the corn plant is explained by philosophers, in conformity with their views of the nature of light. Such as believe in the materiality of light, explain the change which occurs in the sap on the upper surface of the leaf, by asserting that the sunbeam is chemically united with the other constituents, thus forming a new compound. They assert that the light and heat given out by the combustion of vegetable bodies, is simply a giving up of the light and heat which it had formerly imbibed from the sun. Thus, coal is represented as the charred remains of the vegetable antediluvian world, which had drank in the heat and light of the primeval sun. After keeping those rays imprisoned for ages, they give out again in our grates the identical heat and light emitted by an ancient sun, which shone upon a world lying in chaos.

Those who believe in the immateriality of light, account for this change, by a catalytic force residing in the sun beam, which induces a transformation of the sap simply by its presence. However widely philosophers may differ in their mode of accounting for its action, they all agree that the action of light is indispensable for healthy vegetation, and that the growth and vigor of plants is diminished in proportion to the degree of their seclusion from it.

Hence when corn is planted in drills, the direction of the rows should be from north to south, in order that both sides of the plants may receive their proportion of sunlight. When planted from east to west, the northern side has only access to the diffused and never to the direct rays, hence the plant is more feeble and the crop less abundant.

Experiment has shown, that a greater amount of food is obtained from an acre of land when potatoes, beets, turnips or cabbages are planted in intermediate rows between the corn, as the latter has then a much better access to air and light, than when planted in the usual manner. It can scarcely be necessary to say in the presence of this audience, that corn growing in the shade of trees or buildings is unproductive, and that it should be carefully avoided, if the farmer seeks for profit from his field.

I have now passed in review those conditions which are indispensable for the production of maximum crops of corn, and which operate chiefly by preparing the food of the plant to assimilate itself with its substance. It now remains for me to speak—

V. Of the food of plants. I have already stated that a crop of the small flint corn removes from the soil 22,546 lbs. of organic, and 881 lbs. of inorganic matter. It must be borne in mind, however, that every variety of corn removes different amounts from the soil. Some of the larger varieties will absorb a much greater amount of organic, and double the amount of inorganic matter, than is taken off by the variety under consideration. It is evident to the dullest comprehension, that if successive crops are taken from the soil, with no returns to compensate for the loss, it will ultimately become exhausted; no more of the proper food of corn remaining in it, it will cease to grow.

Two great practical questions, therefore, present themselves to the practical farmer. How shall he replace the elements of the substances abstracted from the soil by the crop in the most economical manner? How shall he cause those elements to combine most easily, so as to cause the greatest amount of growth and nutrition for the crop?

These questions must not be confounded with each other. It is possible to have an abundance of food in the soil, yet if it is not in such a state as to afford nourishment to the plant, the soil might as well have been barren for all practical purposes. The farmer's wife may have plenty of flour in her pantry, and since flour is food, she may truthfully say she has an abundance of food in the house; but if she neglects to prepare it for the stomach, by converting it into bread, her family may perish with hunger, in the midst of the elements of plenty. As an illustration of this, you will please to remember, that both potash and silica are constituents of the corn plant. Silica may exist in great abundance in the soil, yet the plant cannot obtain a particle of it for its necessities, so long as it remains as simple silica. It must first be combined with potash, forming a soluble silicate of potash, before it is available as food for the plant. Now silica requires one-half its weight of potash to convert it into a soluble silicate, and little more than one-quarter of its weight of potash is found in the plant. It follows, therefore, that unless there is a greater amount of potash in the soil than is absolutely necessary for the plant, it must be literally starved for lack of silica. Again, there may be enough of potash in the soil, yet if it is combined with bodies for which it has a greater affinity than it has for silica, it can perform no useful office towards the plant in the supply of silica.

It is not enough that an amount of food is contained in the soil just sufficient for the crop. In such a case, all the energies of the plant are directed towards procuring its food; hence too little of its powers can be expended on its assimilation, to return a remunerative crop. It is necessary that the food should be supplied in such abundance, that the plant can obtain it easily and without effort. In this case all its energies are expended, as they ought to be, on the production of grain.

It follows from what has been said—1st, that all the ele-

ments of the crop must be contained in the soil in abundance; 2d, they must be in such a state as to form the proper compounds; 3d, there must be no deleterious matters existing in the soil. When these conditions are fulfilled, maximum crops may be obtained.

The quantity of organic matter in soils varies from one-half to 70 per cent. of their whole weight. Corn cannot grow with so small a proportion as the former, nor would its cultivation be profitable when it is as great as the latter. Good corn soils contain about five per cent. of organic matter, and the very best rarely contain more than ten per cent. The remainder of the soil consists of pulverized rocks, formed either from the layers beneath them or brought from a distance by the agency of aqueous currents.

An analysis of the soil will show its actual condition, and will enable the farmer to add what is lacking and neutralize what is deleterious.

It may be useful to mention the amount required of hog manure or cow manure, to supply the materials of a crop of corn, such as we have been describing. To supply the silicic acid 12,400 lbs. of hog manure, or 13,200 lbs. of cow manure, would be required. For the sulphuric acid, 20,000 lbs. of hog manure, or 15,800 lbs. cow manure. For the phosphoric acid, 8,860 lbs. hog manure, or 22,900 lbs. of cow manure. For the lime, 16,000 lbs. of hog or cow manure. For the magnesia, 23,700 lbs. hog manure, or 18,600 lbs. of cow manure. For the potash, 54,100 lbs. hog manure, or 25,000 lbs. cow manure. For the soda, 16,100 lbs. of hog manure, or 10,600 lbs. cow manure. For the chlorine, 180,900 lbs. of hog manure, and ten times as much of cow manure. Chlorophyl and wax, 40,700 lbs. of hog manure, or 42,700 lbs. cow manure. For the fibre, 91,000 lbs. hog manure, or 95,000 lbs. cow manure. For the dextrine or gum, 66,200 lbs. hog, or 68,600 lbs. cow manure. For the sugar and extract, 375,000 lbs. of hog or cow manure. For the albumen, 30,800 lbs. of hog, or 19,300 lbs. of cow manure. And for the caseine, 19,000 lbs. of hog, or 28,200 lbs. of cow manure.

We have already explained that a part of the sugar, starch, and fibre are obtained directly from the atmosphere, while the remainder is drawn in through the roots. Since this portion

alone is to be provided by the manure, we may safely assume, that when once the soil is brought into a proper state, 25 tons of manure will be sufficient to maintain its fertility for the corn crop.

Although we may replace all the elements of a corn crop, with the exception of the chlorine, by hog or cow manure, yet many of these elements may be given to the soil more cheaply, and in a state better fitted for assimilation, in the form of mineral manures, such as lime, potash, gypsum, nitrate of soda, etc. But a discussion of these topics would swell this already too tedious Address to a length which would be insupportable. It therefore only remains for me to remark, in conclusion, that there is a great variety of species of Indian corn, each of which differs greatly from the rest, in the amount of organic and inorganic matter which it derives from the soil, and also in the chemical character of the grains. Some of the species are adapted to making muscle, others to making fat. They differ, too, widely in the length of time they require in coming to maturity. For example, the small eight-rowed yellow Canada corn was ripe in 108 days from the time it was planted, while the Rocky Mountain variety requires 140 days. There is also a difference in the weight of corn, of different varieties, on an acre. Thus 10 lbs. 12 oz. of Long Island corn grow on a given space, while 15 lbs. 2 oz. of the large twelve-rowed red variety grow on the same space of a precisely similar soil. The late large white flint corn yields 2.4 tons of grain to the acre, on the same soil where the large twelve-rowed yellow Sioux yields 3.5 tons to the acre. The large eight-rowed yellow corn contains 13.9 per cent. of albumen, caseine and gluten, while the Sioux contains 16.5 per cent. of these substances. The latter is, therefore, most profitable as food for working oxen or horses, because it is the nitrogenized substances which go to repair the waste of muscle. The eight-rowed Squaw corn contains of starch, sugar, oil and gum, (which are the fat making portions of the grain,) 60.6 per cent., while the eight-rowed small white flint corn contains 76.6 per cent. of those substances. If, therefore, we wish to use corn for fattening cattle or hogs, the latter is far more valuable. If the Squaw corn is worth 50 cents per bushel, the flint would be equally cheap at 58 cents per bushel. Each of these

varieties is adapted to a special climate and soil; each is adapted for its own favorite locality: here it will best develop its richness, and here best reward the labors of the husbandman. I have shown that the large twelve-rowed red corn yielded on a certain soil and climate 15 lbs. 2 oz. of corn, while the Long Island corn only yielded 10 lbs. 12 oz.; but on a different soil and with a different climate, this result would be reversed, and the Long Island would exceed the eight-rowed in its returns. Within the boundaries of your society, with its northern climate, and its early frosts, the Canada corn, which ripens a month earlier than the Rocky Mountain corn, would have the preference, while in Virginia the protracted ripening would be no objection. Where corn is to be used as food for man, or horses, and working cattle, those species which abound in nitrogenious compounds should be preferred, while, for fattening hogs and cattle, those species should be preferred which contain the greatest amounts of starch, sugar, gum, and oil.

In view of these facts, you will agree with me that more attention should be paid, by such farmers as desire to obtain maximum crops, to the adaptation of the varieties they may plant to the special circumstances of their farms. A few varieties should be planted in detached portions every year, and their produce accurately weighed and measured, until the variety is found best adapted to the farm, thenceforth that alone which has proved to be the best should be planted, taking care that the earliest and best ears are alone selected for seed.

AN AGRICULTURAL EDUCATION THE GREAT NEED OF THE AMERICAN AGRICULTURIST.

[*Extracts from an Address, delivered at the last Fair of the Norfolk Agricultural Society, by* W. S. King, Esq., *of Rhode Island.*]

The lawyer is educated with a constant reference to his future profession; he is *trained to the law;* and having mastered its mysteries, he is fitted for the conflicts of the court-room. Armed with an appropriate education, he stands forth the champion of injured innocence, and with strong hand drags

vice to punishment. The physician acquires from books and observation, the practice of the healing art, which renders him a minister of mercy in our dwellings. The special servant of God, whose errand is to "warn men everywhere to repent," and to comfort the parting soul about to wing its way on a dim and untried journey, learns to understand and expound His will by a careful and continued perusal of the writings of the good and the learned. The shipwright, before he is able to launch upon the deep those models of marine architecture, which, whether propelled by sail or steam, have alike carried our starry flag in triumph on the sea, has been apprenticed to a finished master of his craft, and has pored, dreary hours long, over models, and lines, and rules laid down in books. The painter, who sketches with magic touch the glowing landscape, or the "human form divine," has prepared himself for those light and apparently careless touches that reveal the master, by previous toil and study. The mason, who rears your house-walls, and spans the swift stream with the striding arch, has had his years of apprenticeship and study. And why not, then, the farmer? Why, alone of men, is he who works in the laboratory of nature, and has to do with the secrets of animal and vegetable life; on whom the world depends for its subsistence,—why is he, alone, to be piloted in his operations by the scarcely-visible footsteps of his forefathers, aided by guess work?

The object of agricultural education is to make practical farmers. And here, at the very outset, we differ—wide apart as the antipodes—from many of our calling, as to what constitutes a practical farmer. By many, he only is called such, who works daily with his own hands. His dress comes into the calculation too; a black broadcloth coat of the prevailing fashion would be destructive to his claims; a patent leather shoe, or a glove, would ruin his reputation, however great might be his knowledge. A hand hard and horny as a horse's hoof is a *sine qua non*. Mark how extremes meet. The Broadway dandy, who, with wasp waist and mincing gait lounges along the shady sidewalk, and the brawny farmer, who dares both sun and snow, are alike vain of their hands! But the hands of the one, to be *a la mode*, must resemble a nether mill-stone, while the other's rival the velvety softness of

a cat's ear! Deny it who may, one's claims to be called a practical farmer are generally judged by outward appearances. His hands, are they hard—showing labor? His dress, is it coarse—to stand work? His boots, are they of cowhide, and heavy? All tending to prove that it is the amount of labor that a man performs with his own hands, and not his mental qualifications and proficiency, that procures the verdict in his favor. Yet, according to the ordinary definition of a practical farmer, the patient ox might put in a pretty fair claim. His hands and boots are harder than his biped brother's; his dress is stouter, and is of the same stuff that his great-grandfather wore; and he toils, at the plough or at the cart-tongue, all the day and every day. But, gentlemen, this is not my definition of a practical farmer. Clothed in what dress it pleaseth him to wear, with hands hardened by toil or not, in this land of common schools and of general intelligence, "*the* MIND *is the measure of the* MAN."

Because yonder individual came from the hands of his Maker small in stature, does it necessarily follow that in all the practical employments of life, or even in those that seem to require the most physical strength, he must be the inferior of his stalwart brother, who stands "six feet in his stockings?" Stand, then, awhile, upon the quarter-deck of a ship, as she strips for a contest with the storm. The bullying winds roar around her, the dark sky seems to descend upon her, the angry waves lift up their heads, threatening to ingulf her. That tempest-tost bark, now piercing the clouds with her trembling masts, now driving headlong into the yawning trough of the sea, is freighted with human souls. Who now trusts to the boasted strength of his right arm? who feels security in the height of his stature? All turn their anxious eyes upon the practical sailor, who commands the craft,—a man puny in person, very possibly; with clean, delicate hands, sporting, mayhap, a seal ring; dressed as if holding tar in contempt,—he alone, with the blessing of God, without which we can do nothing, can rescue those giant sons of the ocean from their imminent peril. And, when storm-driven from their course, he alone can pilot them in safety to the desired haven. If, then, in the hour of danger, when Death rages for his prey and a yawning sea shows the ready grave, men acknowledge the

might of mind; why is it that in the peaceful occupation of agriculture, you will set up sinews before it?

As we cast our eyes over the country, we see it traversed in every direction by roads of iron; mighty hills are demolished, wide valleys are filled up, and swift streams are spanned by viaducts. The neigh of the steam-horse wakes the echoes, far and near; as, with eyes of fire and breath of pitchy smoke, he rushes along his iron road with the roar and the strength of the avalanche. Now if there are things that practical men can surely do, the piling of dirt and stones into a long narrow heap; and the digging down of banks of earth; and the hammering of iron and the putting together of bolts and nuts and plates, must be among them. But we do not give to the thousands of brawny workmen, who ply pick and spade, the honor of building the railroad; nor do we credit to the faithful smith, who, obedient to directions, has wrought out a rod, and again hammered out a plate, the performances of the finished locomotive.

By and by,—as all now admit that a man may be a finished practical sailor, who does not defile his palms with pitch, or oakum, or rattlin-stuff; and as one may claim to be a practical builder, rearing huge structures of granite, bridging rivers, and moving mountains, who does not harden his hands by use of spade, pick, or crow; so will we acknowledge that a man may be a practical farmer, competent to the management of acres, who does not toil all the day long at the plough-tail. To farm well, as to direct any other operation well, the "super" must thoroughly understand how things ought to be done; and then the proverb will be found to hold true of farming, as of most things else,—"the eye of the master is of more value than his hands."

A great bug-bear to plain farmers, and a lion in the path of agricultural advancement, is Science. You have allowed yourselves to indulge the idea that a scientific farmer is one who goes a-field with his mouth crammed full of hard words, and his arms filled with gallipots from the drug-store. The manure for an acre of land, you have made him declare, he can carry in one vest pocket; and thereupon you retort, that the resultant crop he will be able to convey home in the other. Common opinion has stuffed his coat pocket with books, and

his hat with pamphlets; and even from out his bosom peep papers, covered with calculations and estimates. Thus armed by the bookseller and the apothecary, you push him forth to the hay-field. Ask him when ought hay to be cut,—in the flower or in the seed,—and he answers from "Vol. 6, page 281." Speak of the depth of ploughing or the quantity of manure to the acre; and you cause him to squat on the wall, till he can consult the tables of contents of a score of treatises, and read out the recorded experience of an hundred theorizers.

This man of print and pepper-boxes is not entirely the creature of your own creation; there are originals of this portrait,—men of mere pretensions to scientific acquirements, the more supercilious and presuming in proportion to their shallowness. These are the chaps who have created in the minds of farmers a prejudice against that science, of which they pretend to be teachers. These pretenders, these mere book-farmers build theories, and then try to twist and squeeze facts to accord with them. * * * * * * * * *

These are the men who have brought ridicule upon science, instead of concentrating it upon themselves.

Now science is simply *knowledge reduced to a system;* and this system which has worked wonders in every other department of industry, we commend to you. Of water, science has built bridges thousands of miles long, and upon this race-course of nations she has placed and propels steamers and sailing craft, plying with the regularity and despatch of an ordinary ferry boat. The sun has been instructed as a portrait painter. The lightning is harnessed as an express-man. And of late, we learn that the air we breathe has been made to labor in the cylinders of Ericsson with a force superior to steam. These are the triumphs of science,—of systematic knowledge.

Justice calls science to her aid. They descend into the tomb. The dead are made to speak, and tell the terrible tale of their violent death.

With strained eye science searches the heavens, to manifest the wondrous works of God. Twinkling plainly before her upraised glass is a star millions of miles distant. With patient calculation she traces the route traversed by this eye of heaven, back to its far off source; and tells to her astonished

hearers, that this light, which has travelled at the rate of 20,000 miles in a second, has been 3,541 years in coming from its distant home. Bessel, a Prussian, has discovered the distance of a fixed star to be sixty-three billions of miles from us. *Sixty-three billions of miles!* The mind of man refuses to conceive of such distance; he can but express it in figures.

Science, with reverent tread, approaches the very council chamber of the Creator; and, from off the outspread plan of the universe, reads his yet untold decrees. She tells of the day, —and names the very day and the hour and the fractions of a minute,—when the "face of the sun shall be darkened, and the moon shall refuse her light." She tells of the coming of the fiery comet. Nay, more. She dares to say that the completeness of the Divine plan of the universe requires, that a planet should exist where none has been found. Hard upon the heels of the daring assertion comes the announcement of the discovery of the *required* planet.

Science thus bridges oceans, conquers time and space, and wrenches their secrets from the heavens; but farmers yet are found, who say that it cannot aid them to grow beans,—that it is not *practical!*

The washerwoman laughs at science, as she stands over her washtub, and uses *soap*. The smith smiles at the pretensions of scientific men, when he tires a wheel. But how many years of dabbling in grease and ashes would have enabled the woman to make a recipe for soap! And how many tons of iron would be heated and cooled before the blacksmith, of his own observation, would fathom the mystery of expansion and contraction?

Science is vilified and ridiculed because she has not already explained all the secrets of nature; and because she often errs, when inquired of by the farmer. Allow to her as many years in the field of agriculture, as she has enjoyed,—yes, enjoyed and improved,—in other fields, and the results, which she will present,—not sell, but present,—to you, will be quite as astonishing and quite as incalculable in value. But cramped within confined limits, hooted at when she appears abroad, how is it possible that science can do herself justice.

The practical farmers,—fondly so styling themselves,—have had in possession "the cattle on a thousand hills," and the

thousand hills themselves, for over five thousand years; but are now unable to tell how many pounds of hay go to a pound of beef. And in this assemblage we could not agree with unanimity upon such questions as these;—whether is it better, to plant large potatoes or small?—to top corn or to cut it up at the but?—to strip off suckers or not?—to cut grass in the flower or in the seed?

These are plain questions, which one would suppose might be answered by a thirteen-year old boy of ordinary observation; but five thousand years of feeding and killing and cutting up; and of planting and reaping and gathering into garners, have not enabled the farmer to decide these and other mooted points. Is it, then, an exaction on the part of science, to demand "a clear field and no favor" for ten or twenty years at least? Is it unreasonable?

Scientific agriculture is common sense and system applied to the cultivation of the soil. It would be interesting, in this connection, to inquire what foot-hold scientific agriculture has in your county of Norfolk.

How many farms, gentlemen, within the reach of your observation, are scientifically cultivated? On how many is the depth of the ploughing guaged by the depth of the soil, the character of the subsoil, and a wise intention to render the fertile loam deeper year after year, inch by inch? How many farmers of your acquaintance, who enter on a farm with a soil three inches deep, undertake, as they well and easily might, to render it in ten years, twelve inches deep? I would tell you here, that the experiments of thousands of farmers have proved that, by thrusting the point of your plough one inch, or three-quarters of an inch deeper at each ploughing and bringing to the surface so much subsoil, to be operated on by the atmosphere and to be benefited by the manure, year after year, you will to this extent increase your active fertile soil, and gradually create another farm, as it were, under your old one. But this would be scientific farming; and our American farmer who fears no foe, shies at the sound of the word *science*.

On how many farms in this State, or in any State, is the manure applied with sufficient knowledge of the component parts, and consequently of the wants of the soil? On how many is the manure itself prepared and preserved, so that it

retains all of its valuable constituents? Why, gentlemen, if one were to say that plants, to thrive, require food in certain proportions; and that if one of the necessary substances is not present in the soil, and is not supplied in the manure, the plant cannot thrive; and that in proportion as you have or apply the precise quantity of each ingredient necessary, so nearly do you come to getting the maximum crop,—you would set it down at once, in scorn, as scientific farming! And yet how else do you account for the fact, that one man grows an hundred bushels of corn to an acre and another but twenty? Why, clearly, because the land whereon grew the hundred bushels was naturally, or by scientific treatment, in a proper condition for corn-bearing,—had in its womb all the necessary kinds, and enough of each kind of food, that the young and the growing plant required for its leaves, its stalk, its tassel and its ear. And how do you account for the fact, that you do not get an equal crop on the same ground the next year? Why, because the first crop has eaten up a good share of the food in the ground-pantry; and the third season, (if any man is silly enough to try corn again on the same ground, without having supplied food by manure,) the third crop would find the shelves pretty well cleaned; and the progeny of that year would be pigmies.

On how many farms in Norfolk County is an accurate calculation made of the cost of growing different crops, so as to decide which is the most profitable to raise? On how many farms is an account kept of outlay and income from each field and each animal, that the prudent husbandman may know where is the mouse-hole in his meal-bin? This is not done because it would be scientific farming. To be sure, a merchant who pretended to carry on an extensive business without keeping books, and without taking now and then "an account of stock;" or who continued to deal in certain styles of goods, without knowing whether he was making or losing money by the operation, would be held insane. But surely that is no reason why a man who prides himself on being a plain, practical farmer, should farm by arithmetic.

Do farmers hereabout, or farmers generally anywhere, attempt gradually to improve their seed by early and judicious selection; and by always planting the best, instead of re-

serving the worst for that purpose; or do they sell all that is fit to be sold, and keep the poorest for home use and for seed? This gradual improvement of seed, such as Mr. Brown, on an island in Lake Winnepesaukee, has made in corn—known as Brown Corn—and as many others have made in many plants, and fruits, and flowers, by the simple selection of seed, with judicious cultivation,—this smacks rather too much of science for a practical farmer.

Gentlemen, I have endeavored to commend to you agricultural education,—the fitting of a farmer for the successful pursuit of his noble profession,—precisely on the principle that a lawyer, a doctor, a shipwright, or a true sailor is fitted for the duties of his position. But it is replied to me that the men of this generation are too old to go to school again. This is an error, for a wise man is at school all his days. Or if allowed to be true, you can yet educate your children who are to be farmers, *as farmers*. While their minds are plastic to receive impressions, and free from the prejudices which years strengthen upon us, let them drink at the fountain of knowledge; that, when the icy hand of death has snatched us from the scene of our labors, they may fill, and more than fill, the places that will "know us no more forever." That they may commence, not at the lowest round of the ladder, where we began to climb; but may mount from the height where our grasp is fixed, when we are suddenly summoned to another life.

Educate your children, and you will rear up benefactors of mankind. The advantages of education in every pursuit, and for all the purposes of life, is no new theme to a New England audience. Why, why do men listen with incredulous ears, when we commend to them the proper education of a farmer? Imagine for a moment, that all the scientific, practical ability, that is now employed in watching the currents of the air and the currents of the ocean, the courses of the tides and the courses of the stars, and sounding for shoals and sounding for soundings, and dividing the heavens, the earth and the sea into squares,—was engaged in studying the secrets of the earth's fertility, and in improving our implements of husbandry,—do you believe that, in such case, many years would elapse ere we could grow two blades of grass where springs but one now? Do you believe that we should toil and sweat at our labors

with so little pecuniary remuneration for so great an outlay of time, talents and capital? I tell you, nay.

New worlds of discovery in the tillage of the soil lie before the generations that succeed us, which will never be disclosed to our eyes;—inventions for facilitating the cultivation of the earth, and for increasing its production to meet the wants of the gathering millions that will one day crowd it;—discoveries that would startle even this age of wonders. We may not live to see it;—no, we shall have passed "that bourne, whence no traveller returns;" but it is in the womb of time. What the fierce steam-horse, whose eyes are fire, and whose breath is as the blast of death,—who howls along the hill side, and rushes beneath mountains with the resistless fury of the whirlwind and the terrible strength of the storm,—is to the ancient stage-coach, that, "like a wounded snake, drags its slow length along," shall be the doings of our sons, as compared to our own.

WHAT GOVERNMENT OUGHT TO DO FOR AGRICULTURE.

[*Extracts from an Address, delivered before the Bristol County Agricultural Society at its last Fair, Oct.* 15, 1852. By Hon. R. C. Winthrop.]

And now, having said thus much, and the limits of this Address will not allow me to say more, both in regard to what government cannot do for American agriculture, and also as to what it actually has done in the past, I come to a brief consideration of what it can do, and what it ought to do, in the future.

In the first place, it can adopt systematic, comprehensive, and permanent measures for ascertaining from year to year, or certainly from census to census, the actual condition of our country in relation to agriculture, the quantity of land under cultivation, the proportion of cultivated land devoted to the production of different articles of food, the relation of production to population in the various States and in the country at large, the comparative productiveness of the same crops in dif-

ferent parts of the Union and under different modes of culture, and generally whatever details may be included in a complete statistical account of American agriculture.

Our commercial and navigating statistics are already provided for, as incidental to our revenue-system. We need similar returns both of our agriculture and our manufactures; and I should not be sorry to have them committed to a common bureau.

One of the brief sayings, which have given a name and a perpetual fame to the Seven Wise Men of Ancient Greece, is the simple precept, "Know thyself." And a celebrated Latin poet has not been willing to regard it as a mere saying of human origin, but has emphatically declared that it descended from heaven.

It was a saying addressed to individual man, and undoubtedly contemplated that self-examination, that searching of the heart, which is a duty of higher than human authority, and which is essential to all moral or spiritual improvement. But it is a doctrine as applicable to the outer as to the inner man, and as essential to the progress and improvement of nations as of individuals. And this country, beyond all other countries, needs to know itself, to understand its own condition, to watch closely its own progress, to keep the *run* of it, as we may well say, for it is always on the run, advancing and going ahead with a rapidity never before witnessed, or dreamed of. More especially should the industry of our country know itself, and realize its own condition and circumstances. American labor, in all its branches, should have a map, on which it may behold its own aggregate position, and its own individual relations, and by which it may be enabled to see what obstructions and interferences are in the way of its prosperous progress; to see particularly where it obstructs itself, by pressing into departments already too crowded, and where it may obtain relief and elbow-room in departments not yet occupied. American agriculture, above all, should be able to look itself fairly in the face, as in a mirror, through the medium of the most detailed and exact periodical surveys, that it may discover seasonably any symptoms of over-action or of under-action, if there be any; and that it may run no risk of expending and wasting its energies in unprofitable toils.

In the next place, government, State, and National, can encourage agricultural science, and promote agricultural education.

This subject has been so nearly exhausted, during the last year or two, by President Hitchcock's Report to our own legislature, by Dr. Lee's Reports to the Patent Office at Washington, and by the lectures and addresses in which it has been treated in all parts of the country, that I propose to notice it very briefly.

Undoubtedly the noble system of common school education, which is already in existence among us, and for which we can never be too grateful to our Puritan Fathers, is itself no small aid to the cause of agriculture. The farmers, and the farmers' children, enjoy their full share of its benefits. It furnishes that original subsoil ploughing to the youthful mind which is essential to the success of whatever other culture it may be destined to undergo. There is no education, after all, which can take the place of reading, writing, and keeping accounts; and the young man who is master of these elemental arts, and whose eye has been sharpened by observation, and his mind trained to reflection, and his heart disciplined to a sense of moral and religious responsibility,—and these are the great ends and the great achievements of our common schools,—will not go forth to the work of his life, whether it be manual or mental, whether of the loom or the anvil, of the pen or the plough, without the real, indispensable requisites for success. The great secret and solution of the wonderful advance which has been witnessed of late years, in all the useful arts, has been the union of the thinking mind and the working hand in the same person. Heretofore, for long ages, they have been everywhere separated. One set of men have done the thinking, and another set of men have done the working. The land has been tilled, the loom has been tended, the hammer and the hoe have been wielded, by slaves, or by men hardly more intelligent or independent than their brute yoke-fellows. In other countries, to a considerable extent, and even in our own, so far as one region and one race are concerned, this separation still exists. But a great change has been brought about by the gradual progress of free institutions; and, in the free States of our own country especially, we see a complete combination of the working hand

and the thinking mind, of the strong arm and the intelligent soul, in the same human frame. This has been the glorious result of our common school system, the cost of which, great as it has been and still is, has been remunerated a thousand fold, even in a mere pecuniary way, by the improvements, inventions, discoveries, and savings of all sorts, which have been made by educated labor in all the varied departments of human industry. It is now everywhere seen and admitted, that the most expensive labor which can be employed is *ignorant* labor; and, fortunately, there is very little of it left in the American market.

But, while the great substratum of all education for all pursuits is abundantly and admirably supplied by our common schools, no one can fail to perceive, or hesitate to admit, the advantages which may accrue from something of a more specific and supplementary instruction for those to whom the care and culture of the American soil is to be committed. The earth beneath us has been too long regarded and treated as something incapable of being injured by anything short of a natural convulsion, or a providential cataclysm. We have been so long accustomed to dig it, and ditch it, and drain it, and hoe it, and rake it, and harrow it, and trample it under our feet, and plough long furrows in its back; and have so long found it repaying such treatment by larger and larger measures of endurance, generosity, and beneficence,—that we have been ready to regard it as absolutely insensible to injury. Because our chains and stakes have exhibited from year to year the same superficial measurements, we have flattered ourselves that our farms were undergoing no detriment or diminution. We have remembered the maxim of the law, "He who owns the soil owns it to the sky," and have been careful to let nothing interfere with our air or daylight; but we have omitted to look below the surface, and to discover and provide against the robbery which has been annually perpetrated, by day and by night, upon its most valuable ingredients and elements.

The discovery has at last been made, the danger has been revealed, the alarm has been sounded; and if government can provide bounties for the destruction of the wolves and bears and foxes, which threaten our flocks, our herds, and our hen-roosts, I see not how it can withhold some seasonable pro-

vision against the far more frequent and more disastrous depredations by which our soil is despoiled of its treasures, through the want of science and skill on the part of those who till it. These depredations are none the less treacherous, or the less formidable, I need not say, for being carried on in no malicious spirit, and by no hostile hands. The worst robberies, of every sort, moral or pecuniary, of character, of property, or of opportunity, are those which a man commits upon himself. It is due to ourselves, it is due even more to our children, that the national soil should not be impaired by our ignorance or our neglect. It is a great trust-estate, of which each generation is entitled only to the use, and for the strip and waste of which the grand Proprietor of the Universe will hold us to account.

Whether the promotion of agricultural education shall be undertaken through systematic courses of scientific lectures, or by agricultural schools and colleges, with experimental farms attached to them, or by the preparation and distribution of agricultural tracts and treatises, or by all combined, it is for the farmers to say. What they say will not fail to be rightly and effectively said. With them words will be things; for no government will venture to resist their deliberate and united appeals.

IMPORTANCE OF AGRICULTURE.

[*Extracts from an Address delivered at last Fair of the Plymouth County Agricultural Society.* By Hon. J. H. W. Page, of New Bedford.]

Is not agriculture, then, an important and honorable calling? In comparison with it, the learned professions dwindle into insignificance.

Agriculture,—Manufactures,—Commerce. As Faith, Hope and Charity form the arch of the Christian graces, so these of the industrial interests. Every manufactory-driving wheel may stop, and agriculture retain its vital and paramount importance; every sail may rot, and agriculture survive, the stay of the nations; manufactures and commerce may both perish, and agriculture still hold its place as of the first necessity, and

the last and sure hope of civilized man. But let agriculture die out, and civilized society must cease, and manufactures and commerce must wither like Jonah's gourd. We sometimes amuse ourselves by imagining how the world would get on if the art of printing, or all knowledge of that wonderful power, steam, should be lost; but let me ask you to amuse yourselves for a moment by imagining how the world would get on if it should lose all knowledge of the *plough* and its kindred implements?

In speaking of agriculture as the most important art, the source and foundation of all other arts, I desire not to be misunderstood. Agriculture, commerce, and manufactures, of course including the mechanic arts, are each and all important to the well being of civilized society. I would not be thought to say a word in disparagement of either. He does an ill office who attempts to elevate one branch of honest and useful industry at the expense of another, or to create a jealousy between those who pursue different employments.

Agriculture, manufactures, commerce; all essential to the good of all; each promotive of the good of the other: manufactures creating for the farmer the best of all markets,—a home market,—and commerce carrying his surplus products to those who need them, and bringing to his door, in exchange, the products of other lands.

But still, agriculture, manufactures, commerce: agriculture, the august mother,—manufactures and commerce her two beautiful daughters. The mother may survive the daughters, —the daughters cannot survive the mother, and they must die when they cease to draw nurture from the maternal breast.

If, then, farmers of Plymouth, the importance of a calling to mankind, the amount of capital and the numbers employed, and the amount of good produced by it, can give it respectability and dignity, your profession has all these elements in the highest degree.

While Providence has clearly designed that so large a majority of men should devote themselves to the cultivation of the soil, care has been taken to surround it by favorable and attractive circumstances.

Physical, intellectual and moral education;—these are regarded as essential to the true development of the human

being. Without going, for contrasts, to the serfs of Russia, who are almost a part of the soil, or to the farm laborers of England and Ireland, who are too often below the hope to rise, except to the gallows, and below the fear to fall, except into distress, and thence into the poor-house, or worse, where will you find a class of men so favorably circumstanced, in relation to physical, intellectual and moral development, as New England farmers, as Massachusetts farmers, if they are but true to themselves?

"In the sweat of thy face shalt thou eat bread." That is generally regarded as the curse of the Lord upon Adam; but unless our great progenitor was constituted differently from his children, the love of the Lord was therein abundantly manifested. Any man who has made a fair experiment of idleness and physical inactivity will probably have come to the conclusion that Paradise, with its spontaneous and ever-springing fruits and flowers, its tame and submissive beasts, and birds of brilliant plumage and sweetest song, were a poor boon with the condition annexed that the face should never sweat from exercise or labor.

Be that as it may, for physical, intellectual and moral growth and health, daily labor, of some sort, is as essential to men women and children, as daily bread. While nearly all other classes, including all the professions, pursue their callings under circumstances more or less unfavorable to physical development and health, the farmer follows his vocation in the pure air of heaven, and his daily habitudes fit him to receive the kisses of the keenest blasts of winter without shrinking. His work expands the chest, strengthens the lungs, exercises and develops the whole animal, which, I may be permitted to say to-day, is as necessary in reference to men, women and children, as in regard to sheep, hogs and cattle. However much sentimental philanthropists bewail the physical condition of other classes, they never presume to indulge in the luxury of tears over the condition of the farmer.

The man whose life is devoted to the operation of making the point of a pin, with the help of machinery, may, or may not, and I have no time to go into the consideration of that question, do his work as well without as with intellectual culture. But the farmer cannot. Farming is an intellectual as

well as physical labor. The man who is content to blunder on in ignorance and make no improvement, may stay on land and cumber the ground, but is not worthy to be called a farmer. Thought, calculation, the following of causes to their effects, and the tracing of effects back to their causes, are essential to the farmer. Some knowledge of the different kinds of soil, and their aptitude to different kinds of crops, and the peculiar cultivation which each crop demands, the farmer must have.

However content our farmers might heretofore have been, while rich virgin soil was readily to be found, and intercourse was infrequent, to be ignorant of their own business, and to mark time where their fathers left them, none but the most stupid can remain so now; for our cultivated lands give unmistakable evidence that they demand of the farmer, in return for their harvests, something which they have not heretofore received; and public attention is so strongly drawn to the interests of agriculture, and the best practical and scientific minds are brought so strongly to bear upon them, that throughout the whole of New England and the country there is an agitation of the subject that reaches and affects every farmhouse, and excites thought, and diffuses and elicits knowledge, even in the midst of the most fertile and seemingly inexhaustible plains of the West.

And to the aid of our farmers, in their progress, come the numerous able and instructive agricultural papers and other periodicals, as well as more elaborate works, no one of which can be read from week to week without profit,—showing the farmer, as they do, what other theoretical and practical farmers think, what difficulties they encounter, how they overcome them, giving him the benefit of their experience, exciting him to make a subject of thought of what he himself has done or omitted to do, and what the situation and capabilities of his own farm require him to do; arousing him to action, and inviting him to treasure up, for the benefit of himself and his children, the fruits of his experience.

With these demands upon him, from the very nature of his profession; with these facilities for acquiring knowledge relating to it, and other matters, and with that glory of New England, always cherished by the farmer, the common school, together with the long winter evenings, and the leisure hours

of the whole year, what peculiar opportunities have the New England farmer, and his household, for intellectual cultivation in reference to his own business as well as in other departments of knowledge! And, to a commendable extent, is it not true that these advantages have been improved? Their out-of-door exercise, pure air, and habits of useful industry from their early years, fit farmers' children for mental culture; and it is a question whether the few months' schooling which they enjoy is not of more value than the whole year to those who live in cities, and beside going to school, do nothing, or worse.

As to moral education, the farmer and his family probably are affected in the midst of the beautiful works of God, and the evident traces of his fingers on the familiar objects of every day, much as the generality of mankind are by the glorious canopy of heaven,—to whose majesty and beauty familiarity makes us so insensible. But senseless as the clod he treads upon must be that farmer who, year after year, sees the earth, in its season, open its warm bosom for the reception of seed; observes the shooting blade, the swelling stalk and the ripening fruit; who trembles at the fear of a failure of his crops, and rejoices at the prospects of an abundant harvest; who inhales as he goes forth to his work, the fragrance of a thousand flowers, and sees purity and beauty all around him, and still never raises his thoughts with gratitude to the great Giver of all, who thus, almost visibly, surrounds him and his household with the arms of his love.

It is obvious that this farming is a vast and important business; a business that can never wear out so long as civilized man inhabits the earth; a business with peculiar advantages and attractions for intelligent and well regulated minds. This country, with the irrepressible tendency of its people to agricultural pursuits, its power of production nowhere fully developed, and its immense extent of fertile lands yet unattempted, is destined to be the greatest bread-producing country ever known on the face of the earth. With our home and foreign markets,—the one, from our increasing manufactures, sure and constant, unless our manufacturing and mechanic interests shall be crushed by some suicidal policy of the government,—the other, as I apprehend, to be, for years to come at least, fluctuating and unreliable,—there is a demand

for agricultural products which stimulates and encourages the agriculturist to constant progress and improvement. Farming, intelligently and judiciously conducted, must thus hold out inducements to those with whom profit is a principal object; profit not so great or so rapid as is promised by manufactures, commerce, and some other pursuits, but more free from killing anxieties, and terrible vicissitudes; profit slow, sure, and more to be coveted by well regulated minds.

Farmers and farmers' sons, what think you of agriculture? Ought you not to think it among the most important and most honorable pursuits, and worthy of the best intellects and best efforts of the best men?

Sung the Roman bard, nearly two thousand years ago,—

> "O fortunatos nimium, si sua bona norint,
> Agricolas!"

O thrice happy farmers if they knew their own blessings; and I repeat the strain, thrice happy farmers if they knew their own blessings.

Farmers of Plymouth County, live worthy of your vocation. Train up your sons in the way they should go, with that thorough physical, intellectual and moral development, for which you have such advantages: not that it is to be expected, or desired, that they should all become farmers; because a constant sort of subsoiling is going on in society, and under our free institutions, that what has been and is, will be; and many of the places of honor, and influence, and responsibility in all walks of life, public and private, will continue to be filled from your ranks, by those who come forth to the view of the world with that great prerequisite to success, a sound mind in a sound body.

Let your sons be so trained, that a race worthy of their ancestry may ever be ready to answer to the call of duty, whether it be to fill the place of an accomplished farmer at home, or in not a more honorable, but more public sphere of action.

Certain facts concerning agriculture are well ascertained. Nature, in the course of ages, has, by various deposits, by the decomposition of vegetable matter and the blending of various elements, furnished much of the earth's surface with a genial and productive soil. That is a wise and beneficent provision, fitted to the necessities of man, the pioneer, struggling with

straitened means and lack of knowledge. Experience has proved that some of the original elements of fertility in much of our soil have been exhausted or diminished, so that many of our lands refuse to produce their wonted crops. Experience has also shown that to restore those elements and regenerate the land, manures of various kinds are valuable agents. But with all the knowledge and skill of our farmers in the modes of cultivation and the application of manures, statistics show, and it has come to be a generally admitted fact, that the average productiveness of lands long cultivated has diminished; and it is evident that something different from the ordinary appliances must be resorted to in order to restore and keep up the powers of production.

Have we reason to believe that the progress of knowledge will meet the farmer's need?

It has been truly said, that "in the first stages of civilization, art precedes science, science follows. In the advanced stages of civilization, science precedes art, art follows." I think that in the history of our agriculture, we have passed through the state where art precedes and science follows, and that we are now in the transition state between that and the state where science precedes art and art follows.

In this country, science, as applicable to agriculture, is in its infancy. But science, developed in this, as in other things, by the exigencies of the times, has begun its work in the new field. No man, probably, now doubts that the chemist can analyze soils and tell with certainty their component parts, or that he can analyze the products of the earth, wheat, corn, oats, turnips, &c., and tell with certainty their component parts.

Those facts, and the further facts that plants grow by feeding, as animals do, and that the food of plants must be found in the composition of the soil where they grow, in order to their perfection, being admitted, it follows irresistibly, that science may open to the farmer most valuable mines of knowledge.

Few men in this country have yet devoted themselves to this branch of study. Agricultural chemists among us are few. I was assured recently, by good authority, that there were not above five men in Massachusetts who had the ability to analyze soils. Agricultural science has but just begun its work

among us, but is feeling its way along. It has begun, and, as the French say, "it is only the first step that costs." The demand will create the supply. I do not believe that scientific farming is to be made easy to the lazy and unenterprising, or that agricultural chemistry and the ability to analyze soils and products will in my day become as common as the ability to read and write; but still I have no doubt that the day is now dawning, and that those of us who live twenty years will see its full light, when science will be the guide of art in agriculture, and practical and scientific skill, united in the same man, will be common among farmers; and that there will be great increase in the productiveness of our lands from improved modes of cultivation, and the application of specific manures to meet the wants of particular soils and particular crops.

That such an event is desirable, all will admit; but is it likely to happen? I ask, if it should occur, would it be more remarkable than things which have occurred in our time? How long is it since the idea of navigation by steam was ridiculed as an absurdity? How many years ago since it would have been pronounced an impossibility ever to send a message thousands of miles with the rapidity of thought?

All knowledge that is uncommon is mysterious, and the diffusion of it among the people believed impossible. But familiar instances occur to me of mysterious and abstruse knowledge becoming very common. Algebra, which our school girls now study, and are proficients in, was first introduced into our academies since my recollection; and I remember well, when a class of young men about to enter Harvard University, thought it an outrage that they should be compelled to enter upon that abominably hard study; and many of the higher branches of mathematics which were then considered too deep for all but a few superior mortals, are now well understood in and out of the universities. Go back twenty-five years, and civil engineering was as little understood as agricultural chemistry now is; it was a mystery, and that man who knew enough to construct a railroad was a wonder. But there was a demand for that kind of knowledge, and it was supplied. Many a self-made young man who was not born a quarter of a century ago, is now as accomplished a master of that branch

of science as were the best professors of that day. So will it ever be; the supply will follow the demand.

Filled, as the ranks of our farmers are, with active and inquiring minds, alive as they are to their own interest, and favorably situated as I have shown them to be for intellectual investigation and development, no agricultural people were ever better prepared than our own for carrying forward the march of reform and improvement. With an agricultural population so prepared for investigation and inquiry, it is a subject of congratulation that our State government, which has heretofore done partial justice to the great agricultural interest by its encouragement of agricultural societies, has, somewhat tardily, yet as one of the first of the States, established a Board of Agriculture. That Board, rightly conducted, cannot fail of being the means of concentrating the practical and scientific knowledge diffused over the Commonwealth, and carrying forward the great cause of agricultural education in its broadest sense. If the farmers so will, it will be the means of popularizing science and wedding it to practice, a union from which the happiest fruits may be expected.

The anniversaries of our agricultural societies are emphatically the popular festivals of Massachusetts. Thanksgiving, handed down to us by the fathers, is the cherished, and, I trust, the ever-to-be cherished family festival; but the agricultural show is the great general festival, in which all men who live by bread may and do join, forgetting all political names and party distinctions, and coming together as a band of brethren, to thank the great common Father for his manifold blessings.

I congratulate you, gentlemen of the Plymouth County Agricultural Society, upon the rank which your society holds in the fraternity of agricultural associations. I congratulate you upon the happy auspices under which you meet. Remember that the course of the cause which you are engaged in is onward and upward; and may success crown your endeavors. Remember that the farmer's motto should always be, *not* "forgetting the things that are behind, press forward to the things that are before," and "prove all things; hold fast that which is good."

INTELLIGENT AGRICULTURE.

[*Extracts from an Address delivered at the last Exhibition of the Barnstable Agricultural Society.* By SIMON BROWN, Esq., Editor of the New England Farmer.]

Recent discoveries in chemistry and physiology have led to most important improvements in the culture of plants, and the breeding and rearing of animals; agriculture, is, in consequence, no longer an art of labor, but of *science;* hence the advantage of scientific knowledge to agriculturists, and the susceptibility in the art of progressive advancement. "Agriculture," Marshall says, "is a subject which, viewed in all its branches, and to their fullest extent, is not only the *most* important, and the most difficult in rural economies, but in the circle of human arts and sciences."

Such is the *importance* of agriculture to us all. It cannot lack *dignity*, for it is the mother of all other arts and sciences. It was not too low for Cato, Cincinnatus, and Washington; and it never can be too low for the most exalted mind on earth.

Discontent, then, does not spring from a want of importance and dignity in the occupation, but because *that occupation is not understood.* Farming should not be looked upon as the end of life, merely as a means of subsistence; this, as well as all other pursuits, should be adopted with the view of enabling men not only to improve and beautify the earth, but to cultivate the moral, intellectual, and social powers, and to fill, according to their capacity, their proper station among their fellow men. It should not tend to make men mere machines, who toil for the sole purpose of gratifying their appetites; but it should elevate and refine, to the highest degree of perfection, the better faculties of our nature.

The profits of productive farming would, when conducted scientifically, enable the farmer to accumulate wealth, and enjoy all the comforts and luxuries of refined life. Every community could be made up of the best society—every family could have a good library, and its accomplished sons

and daughters; farmers sons need not leave the favorite pursuit of their fathers, and go into the learned professions, from the erroneous idea that they are more honorable or profitable. Farmers' daughters need not despise the delightful and healthful employment of the dairy, the kitchen, or the loom, and seek elevation in the miserable pursuits and fashions of the city.

Nothing conduces more to the elevation and refinement of the mind than the study of nature; the man who holds frequent communion with nature, and studies and obeys her laws, is always made a better and happier man.

But it is said that the working man cannot study; that study and labor are incompatible and uncongenial. Washington and Franklin both possessed that kind of knowledge which enabled them to be eminently useful to the world, and yet both were emphatically laboring men; laboring not only in directing others, but with their own hands. Many other signal examples might be cited to strengthen the point, were it necessary.

"Manual labor, when not excessive, invigorates the body, and rouses the mind. Muscles strengthened by exercise, and a brain refreshed by pure blood, enable the mind to conceive with clearness, and act with vigor and force. The delicate lark soars high, but soon falls; it is only the eagle, with broad and strong wing and clear eye, that can sustain long flights in the upper air, and gaze at the sun.

"The man with a learning mind, who digs the ground, or sows the seed, makes rapid progress. He sees the benevolence of God in every opening bud and blushing flower. He learns lessons of utility, of design in the natural world; and with a soul enlarged, he applies to books and art, the exponents of other men's minds,—and looks into his own to discover the laws by which it is governed, and the links by which he is bound to his fellow men.

"The working man, in all ages of the world, has been more successful in doing good, in advancing the interests of humanity, than a man learned only in book knowledge. The latter may desire to do as much, but never can accomplish it, being ignorant of the material on which he is working.

"As the world advances, its workers take a higher position; the dignity of labor becomes apparent. The time draws near

when he who *does* nothing will *be* nothing, and when there will be no aristocracy, but that of labor; no noblemen, but the workers."

But the worker must also be a *thinker;* he must become nature's ardent student, and work out, and think out the wonderful processes ever going on in her strange crucible. He must not be discouraged that he knows so little yet of those things which are constantly under his observation; that the knowledge man has accumulated in all the generations of his existence, forms but a small mound in comparison with the unknown.

It is not to be expected that the farmer shall have an exact knowledge of the construction of the trees and plants which he cultivates with so much care; or of the anatomy and physiology of the animals which he rears. He cannot learn the precise habits of the insects which destroy his crops, their periods of coming and retiring, or the office which it is designed they shall fill in the economy of nature. Yet a general knowledge of the laws which govern them, and a constant observation of their habits, will divest us of much of the repugnance felt towards them, and lead us to a profound contemplation of the wisdom and goodness of the Great Architect of all.

We plant the seed, and behold the germ springs to the light and air. What wonderful operations are still carried on! The tree assumes the most stately, as well as graceful forms—the buds, the leaves, blossoms and fruits appear, surpassing in beauty all art of the most skilful hands. It furnishes fuel, shade, fragrance, sustenance, oftentimes protection against summer heats, or winter winds, and always beauty to the landscape.

But the farmer too often stands in the midst of his trees, his plants, and flowers, of his corn, and grass, and grain, which he has caused to grow, and looks upon them as the result of a mere mechanical operation. He overlooks that wonderful and mysterious agency which prepares the food, diversified as it is, and sends it to the farthest bud and leaf of a monarch of the forest, or the minutest tendril of the tiny vine. He ploughs, because it is easier to plant and hoe in a loose soil, forgetting that, in a fine tilth, there are millions more mouths to receive

the food which the plant requires than in a compact soil; that these open mouths catch fertilizing substances from every passing breeze, and drink them in from the cooling dews and genial showers. He forgets that the sand which he applied to the clay land, has found potash in the soil, become soluble, been taken up by the roots of the plant, carried to its utmost extremities, and now covers the straw of his wheat field with a delicate and beautiful coating of sand, or enamel, which gives it strength to stand erect, and thus present its seeds to the influences of the sun and air, and bring them to perfection.

While he reaps, shall he not inquire how this came, and compare it with another field, which fell to the ground and failed to perfect its grain? Will he not investigate these causes, and thus acquire more knowledge of the operations of nature, and more power over his crops?

By an accurate knowledge of the times when insects appear, and the kinds of plants on which they prefer to feed, the time of planting and sowing may be varied, so that it may be possible to escape their ravages in some degree in this manner; or as their period of existence is often very brief, we may learn their time of retiring to a winter home, and destroy them there by late ploughing or other means. The season of their coming and retiring, the food they require, and the length of time they remain, being accurately understood, will, at least, give us a power over them we do not now possess. But this is not all we gain. This knowledge admits us to some of the secret and wonderful operations of irrational life, and thus leads us, by successive steps, "through nature up to nature's God."

The rose bug, for instance, has received its name from its annual appearance coinciding with the blossoming of that plant, and this fact may operate as a note of preparation against its ravages; and so it may aid us against the caterpillar, cankerworm, curculio, and beetles. The latter insect sometimes proves exceedingly destructive. The discovery was made by a gentleman, that they visited and defoliated his cherry trees in the night. When this habit was known, they were shaken down and destroyed in large numbers, and the trees afterwards saved. This fact was learned by reference to a work on insects, and will illustrate what it has become too fashionable to condemn as *book-farming*, as if facts recorded

in a book or newspaper were not as valuable as though declared by the tongue. To be consistent, the scoffer at *book-farming* should reject many of the best practices of the farmer now, because Virgil wrote of them; or Cato, or Columnella, or Jethro Tell, commended them.

The insect race has its part to fill in the great plan, and that part is undoubtedly an important one. We accuse them of encroachments when they select, as their favorite food, the plants we are cultivating for our own pleasure or profit. It may be, that in *their deliberations and conventions*, if they *hold any*, they look upon *us* as the aggressors. They feed on the common bounty as well as ourselves, enjoy their brief existence and die. Our domestic animals do the same; but we make them subserve our purposes, and we are content. We have not yoked the insect race to our implements for practical purposes, but having this decided advantage of them, the possession of reason, it is the part of wisdom to study their habits with patient care, until we become as well convinced of their usefulness, as we are of that of the ox and cow, and that an intelligent Being placed them here for our good.

Many of the beetles live on plants not only of little use to man, but some of them poisonous, and in a state of decay often offensive; they are therefore to be reckoned among our friends. Some live on the juices of animals, and by this means destroy a great number of noxious insects. Others are of service in the arts, affording us the costly cochineal, scarlet grain, lac and manna. Dragon flies and some others subsist upon plant lice, and thus become our active protectors.

The more intimate is our knowledge of the organism about us, the trees, plants, flowers, insects and animals, the less labor shall we be required to perform, and the more shall we adore that wisdom which has formed them all.

I will dwell for a moment on another species of this lowly life, the common house spider. Place one no larger than the head of a pin under the microscope, and his clear black eye, set in a field of delicate blue, becomes distinctly visible. The top of his head is studded with brilliant gems, varying in hues as he changes position under the glass; while along his back are plumes of exquisite color and softness. Each front foot terminates in a club or ball of hair, and this varies in form in

different individuals. But the most wonderful part of this brilliant and beautiful little creature, is its spinning apparatus; more wonderful in its construction than the organization and power of any other animal, I have ever contemplated. No art of man has devised machinery so perfect and yet so simple. With this it constructs its own roads, manufactures its dwellings, weaves its own nets, and snares, and ropes to bind its prey when captured, and all with a spinning jenny so small that it is impossible to see it with the naked eye.

Standing by looms in the cotton mills, I have often witnessed with astonishment, the precision and perfection of their parts, and how admirably each wheel and segment performed its appointed office, and how the beautiful fabric grew under the skilful hand of the craftsman, and his almost intelligent machine! But all this falls short of the mechanism and artistic power of the wonderful spider. A slight variation of position renders the loom useless; but the spider's is a locomotive loom! Destroy his house to-day and drive him from his possessions, and, lo! to-morrow he is quietly established in a new dwelling.

Did he not give the idea of the spinning-jenny to Arkwright, and through him confer the immense benefits on mankind which are realized from this invention? which has scattered cotton cloth—one of the greatest benefits conferred upon man, —over the whole habitable globe, and at so cheap a rate as to be accessible to all.

All the principles of valuable powers, by which we overcome the obstacles in our way, are suggested in nature's works. The power used in all modern printing presses is that of the human knee.

Is there not something to be gained, then, by the farmer, in the study of the inferior creation around him, however minute and insignificant it may appear? But, if there were nothing gained in the mechanical powers, or protection to crops, there would still be incalculable benefit in mental discipline, and the moral elevation of the heart.

The study of natural history, and in this I class entomology, fills the soul with grateful ideas of the minuteness, as well as magnitude of the operations of the Omnipotent Being; expands if with sentiments of His bénevolence and love, and

strengthens the bonds of affection between ourselves in this imperfect condition.

And shall not this interesting study commend itself to the young farmer, impatient to penetrate the mysteries around him, or find acceptance in the maiden's heart, who seeks extended opportunities of observation, and finds little pleasure in the dull routine of daily household work?

Huber, one of the greatest of French naturalists, devoted eight years to the study of *bees*, and thought the time thus expended was promoting the happiness and welfare of man. The world has sanctioned that judgment by ten thousand reprints of his researches. Time will not permit me to enter into any of the interesting details of their history here. But, lord of creation as man assumes to be, shall he contemn the lowly life around him and trample its mysterious organization into the dust, or study its influences and bearings on his own condition, and thus approach his Creator as a knowledge of his works increases?

There is another name inscribed high on the roll of honor, among the useful and distinguished of our country—that of Audubon. With a love of the natural and beautiful that no hardship could daunt, he devoted a life to the description of birds; passing consecutive weeks in the forest, or on the mountain or plain, or by the sea-shore, watching their habits. Leaning against some friendly tree, with his portfolio on his lap, he would patiently sit through a long summer day, in writing an exact description of some bird, learning its peculiar song, and transferring its varied plumage to his note-book. His published works now command the admiration of the world; and his largest volume sells at $800. The intensity of his love of this pursuit was never dimmed by any discouragement; it led him into remote forests away from human habitations and the human face and voice, for weeks in succession, where the earth was his couch, and his rifle the means of obtaining subsistence. His labors now give instruction and delight to millions, and will inspire millions more with a love for this useful and beautiful part of creation—the birds.

If this study occupied the life of an individual distinguished alike for intelligence, and a desire to promote the welfare of his race, shall not the farmer find inducements to enter into its

outer courts, at least, and inquire whether there is not in their contemplation some compensation for his constant physical application? Birds are eminently the friends of the farmer; without them it may well be doubted whether his labors upon many crops would not be utterly in vain. If so they demand our attention in a mercenary point of view. But there is another gain—they exert a direct influence upon the heart; many of our earliest associations are of the birds; their habits of migration and return, their amazing power of wing and artistic skill, and their attachment to old locations, and devotion to their young, have been the themes of admiration in all lands. A study of their habits gives sweetness of tone to the heart, quiets its fears, allays its griefs. How wonderful, that when warned by the approach of winter, our pleasant summer friends have left us, others, far into the arctic regions, should come to enliven the dreary landscape! Then with glistening wing comes the pine grosbeak and the snow bunting. The howling storm and driving snow are but pastime to them.

In the comparative leisure of winter and the intervals of labor from field-work on the farm, and in the house, the study of birds will prove a delightful and profitable recreation. Knowledge acquired of this part of animated nature, *is power*, as much as physical strength to guide the plough, or swing the scythe, is power. It makes men and women stronger, better, more useful, and draws away the mind from what has become the dull routine of life, delving on the farm. Such knowledge heals the discontent which broods upon the mind like a nightmare; heaps up the imaginary gold in California, or kindles the *ignis fatuus* light about the lawyer's office, the merchant's desk, or mechanic's bench, and brings compensation for sunburnt cheeks, hard hands, and coarse apparel. But there are numerous other attractions to study and reflection, both in the animal and vegetable kingdoms about us.

Have you examined the plant at your feet, the tree at your door—investigated the currents of the sap, and learned "how the sweet perfume and delicate hues of the flower, the oil of the olive, the sugar of the cane, the narcotic juice of the poppy, the nutritious farina of the cereal tribes, and the poisonous extract of the nightshade, are all elaborated by the

same mysterious process, and from similar, if not the very same materials?"

By visiting the leaves, the sap becomes a very different substance before returning to the stems and the trunk of the tree. It returns thicker, is in a more concentrated form and better adapted to nutrition, after having thrown off its excess of water. This change causes the fruit to become like that of the branches, and leaves, through which the sap last passes. Thus if a sweet apple is engrafted upon a sour tree, the fruit is sweet, because the sap is elaborated or prepared by a sweet branch and leaves.

Have you investigated the functions of the leaves, and noted the beautiful operations they perform—how they exhale, absorb, and digest? They *exhale* during the day, and throw off the excess of water in the sap; this exhalation is different from mere evaporation, and depends upon the state of the temperature, and the air.

Absorption is performed mainly by the roots; but if these are defective, the leaf assumes the office; and you will see the invigorating effect of a shower of rain on the leaves of parched and wilted plants, long before the water could have reached the roots, and been carried up to the leaves.

Respiration in plants, as in animals, consists in the absorption of oxygen from the air, and giving off of carbonic acid, and is performed mainly by the leaves.

Digestion consists in the decomposition of carbonic acid by the green tissues of the leaves, under the stimulus of the light, the fixation of the solid carbon and the evolution of the pure oxygen.

But I will not dwell on these particulars, interesting as they are. The whole vegetable kingdom is filled with wonderful manifestations of the wisdom, power and goodness of God. On whatever side we turn on the farm, there is still something inviting our contemplation; something to awaken new sentiments of gratitude, new emotions of delight. In the morning the sun glances on millions of liquid drops, changing them into pearls. The questions should arise, How came they there? What unseen power has been at work during the silent night, studding the blades of grass, the bending leaf, and fragrant flower, with these crystal gems?

How many "brush with hasty step the *dew* away," nor ever pause to contemplate it as a part of that wisdom which has created and governs all things—nor as the result of the operation of certain laws. The air being filled with vapor, and the earth becoming cooler than the surrounding air, after the sun declines, condenses the moisture into drops, just as the moisture is condensed into drops on the outside of the pitcher that is filled with cold water in the hot summer noon. But if it is cloudy, there is no dew. The clouds hang over the earth like an immense blanket, and prevent the heat from escaping, or rather re-transmit to the earth the heat which had been radiated from it. The temperature of plants, therefore, does not fall so low as to cause the moisture in the air to become condensed, and there is no dew. The dew comes, too, when it is most needed; when the heat of the sun, unmitigated by any cloudy screen, greatly increases the general evaporation.

Instead of a moment, the whole time allowed me to address you, might be occupied on this interesting subject. My desire, however, is not so much to explain as to present it to your minds in such a light as to attract your attention to it hereafter.

But I will detain you only a moment longer, although I have said nothing of physiology, of heat, electricity, hail, snow or rain; each of which is governed by laws which the farmer should understand, and a knowledge of which would bring a contentment and delight to his mind, far overbalancing any gratification to be realized in the crowded marts of mercantile and commercial life.

I have not touched upon the principles of irrigation, of draining, ploughing, subsoiling and composting; I have said nothing of the grasses and grains, of the culture of fruits, vegetables, and flowers. I have purposely omitted them all, in order to take another view of the requirements of the farm. But they are all governed by immutable laws, controlled by infinite wisdom for our good, and demand of us such careful and earnest investigation as our several circumstances will permit.

I have not time to speak of the domestic animals which serve us, and without which it would be impossible so to increase the products of the earth as to meet the wants of the increasing population. A partial knowledge of the principles of the growth of each of these, of the elements of which they are composed, and of their comparative value, would so occupy

the mind with the useful and agreeable, as to leave little room for complaint or discontent.

Each and all of these have a daily and hourly influence on your happiness and prosperity; without this knowledge in some degree, civilization must decline, and man degenerate to barbarism. Your beautiful cities, the pleasant homes of your villages, and your fair fields, teeming with the products of your industry and skill, would soon sink to ruin and waste, and become the abode of wild weeds and wilder beasts.

The time is coming when the *successful* farmer will be the *intelligent* farmer, as well as the successful merchant he who understands the principles of trade.

When Lord Bacon said that "knowledge is power," he did not mean that it is power alone in the *law*, in writing books, speculation, or surgery, but that it is power over the earth to subdue it to our will; over the trees, and the grass of the fields, to make them bring forth abundantly to satisfy our wants and gratify our tastes; power to introduce *new* fruits and flowers; power over the animal kingdom, to improve the races for speed, for milk, for draft, or the shambles; and power over the climate, even, so that tropical plants shall flourish and ripen their fruits in these regions!

The possession of these powers will verify the axiom of Lord Bacon. And while they cause "the desert to blossom as the rose," they will elevate your own characters, and bring that grateful contentment and satisfaction with your occupation, to which it has been my object in these remarks to lead you; a contentment and quiet current of life, not often realized by professional men. Then—

> "Would you be strong? Go follow the plough?
> Would you be thoughtful? Study fields and flowers;
> Would you be wise? Take on yourself a vow
> To go to school in nature's sunny bowers.
>
> Fly from the city; nothing there can charm—
> Seek wisdom, strength, and virtue on a farm."

Intelligent labor will gladden the heart of the wife, strengthen that of the husband, and make home attractive to the child; will introduce ease and refinement into domestic life, and through these, lift the soul to Heaven to reap the reward of faithful service while on earth, in new fields of glory, where moth and rust will not corrupt.

PROCEEDINGS

OF THE

State Board of Agriculture,

FOR THE YEAR 1852.

PREPARED BY

AMASA WALKER,

SECRETARY, PRO TEM.

BOSTON:

WHITE & POTTER, PRINTERS TO THE STATE.

1853.

FIRST ANNUAL REPORT

OF THE

BOARD OF AGRICULTURE.

To the Senate and House of Representatives, in General Court assembled.

The Board of Agriculture, in compliance with the law of 1852, chapter 142, submit this, their first Annual Report.

The Board held its first meeting at the Council Chamber in Boston, on the 22d day of July last.

The members were as follows :—

Members ex officiis.—His Excellency, the GOVERNOR; His Honor, the LIEUTENANT GOVERNOR; the SECRETARY of the Commonwealth.

Appointed by the Governor and Council.—EDWARD HITCHCOCK, Amherst; MARSHALL P. WILDER, Dorchester; NATHANIEL WOOD, Fitchburg.

Chosen by the Several Agricultural Societies.—Barnstable County, Charles B. H. Fessenden; Berkshire County, Stephen Reed; Bristol County, J. H. W. Page; Essex County, John W. Proctor; Franklin County, James S. Grennell; Hampden County, Francis Brewer; Hampshire County, John A. Nash; Hampden, Franklin and Hampshire, Joseph Smith; Massachusetts, John C. Gray; Middlesex County, Simon Brown; Housatonic, Joshua R. Lawton; Norfolk County, Benjamin V. French; Plymouth County, Seth Sprague; Worcester County, John W. Lincoln; Worcester West, Wm. Parkhurst.

Governor Boutwell was requested to act as chairman, and the Secretary of State appointed secretary *pro tem.*

The members were classified by lot, according to the terms of the law, as follows:—

Members whose term of service expires in 1854, Messrs. Wilder, Page, Proctor, Sprague, Lincoln, Parkhurst.

Members whose term expires in 1855, Messrs. Hitchcock, Reed, Brewer, Smith, Brown, Lawton.

Members whose term expires in 1856, Messrs. Wood, Fessenden, Grennell, Nash, Gray, French.

Its organization being completed, the election of a permanent Secretary first claimed the attention of the Board.

After a discussion of the subject, a committee was appointed to report upon the duties of that officer, and submit the name or names of suitable persons for the office.

A committee of one for each of the incorporated agricultural societies in the Commonwealth was appointed to attend the next annual exhibitions, and report upon the same to this Board.

A committee was also appointed to select such subject relating to agriculture, as may be most worthy of attention, and report at a future meeting. After further incidental business, an adjournment was made to the 5th day of August.

On that day the Board again assembled, and Mr. Wilder, from the committee on the subject of appointing a Secretary and defining his duties, submitted the following report:—

The undersigned, a committee of this Board to prescribe the duties of its Secretary, and to present the name or names of a person or persons suitable for that office, having attended to the subject, report as follows upon

"THE DUTIES OF THE SECRETARY."

1. To make a faithful record of the meetings of this Board.

2. To keep a journal of all important communications, made to or by the Board, in relation to the progress of his and their labors, and of the art and science of agriculture.

3. To open and conduct a correspondence with such practical and scientific cultivators, or other eminent individuals, and with such agricultural associations in our own country, and in other lands, as may be deemed expedient.

4. To collect agricultural statistics, pamphlets and publications; to catalogue and arrange the same, together with such books, maps, charts, documents and other articles, as may be given to, or acquired by, this Board, in a manner convenient for reference and consultation.

5. To obtain and preserve, so far as may be found expedient, and as may be deemed convenient for examination by our farmers, such seeds and specimens of the various grasses, grains, vegetables, fruits and other agricultural products, as are now grown in this Commonwealth, or as may be hereafter introduced into it, and to distribute such new or approved varieties of these, as may be adapted to its soil and climate.

6. To collect and disseminate such information in relation to the best breeds of domestic animals, and the management of the same, as may be suited to promote this most important branch of husbandry.

7. To investigate, as far as practicable, the elements and character of the soils in this State; their adaptation to different crops, and to preserve for exhibition and instruction samples of the same.

8. To endeavor to discover and successfully to apply such mineral, vegetable and animal fertilizers, as may be found within our territorial limits, or as may be profitably introduced from other localities.

9. To receive, preserve, and, under the direction of this Board, to report upon, such approved agricultural implements as are now in use, or as may be hereafter advantageously introduced among the farmers of this Commonwealth.

10. To visit, by the advice of this Board, the various agricultural districts of Massachusetts, and to give lectures on the practice and science of agriculture, whenever and wherever they may deem the same most desirable.

11. To attend, as far as practicable, the exhibitions of the incorporated agricultural societies receiving the bounty of the State,—to receive their returns,—to make an abstract of the same for publication, in connection with his Annual Report, and to perform such other duties as are specified in the act establishing this Board.

12. To coöperate with the Secretary of the Board of Education, so far as may be found expedient, for the introduction

and study of agriculture and kindred branches in the educational system of the Commonwealth, and finally, to promote the objects of this Board by such other ways as he may suggest, or they approve.

Your committee having considered the duties above named as naturally pertaining to the office of the Secretary of this Board, next attended to the other subject committed to them, viz., that of designating a person for the office.

The qualifications of several distinguished gentlemen have received the favorable consideration of your committee, and they are happy to report, that after mature deliberation, they unanimously recommend Edward Hitchcock, President of Amherst College, as a gentleman eminently qualified to receive this trust, and to discharge the duties of the office.

All which is respectfully submitted.

MARSHALL P. WILDER, *Chairman.*

The foregoing report having been accepted with great unanimity, as expressing views of the Board in regard to the duties of its Secretary, and the high qualifications required for that office, a ballot was taken and it appeared that Edward Hitchcock had received a unanimous vote. He was accordingly declared elected, and, not being present, the Secretary was directed to notify him of the action of the Board.

The committee appointed at the last meeting to select such subjects relating to improvements in agriculture, as were most worthy of attention, submitted a report, in which a large number of topics were enumerated. The report was accepted, and many of the subjects assigned to different members.

The third meeting was held on the 7th day of September. It was convened by the Secretary, for the purpose of acting upon the following communication received from Dr. Hitchcock:

Boston, August 21, 1852.

Dear Sir:

To the unlooked for announcement in your letter, that the Board of Agriculture of this State had unanimously chosen me as their Secretary, I have given all the attention which so distinguished an honor, coming from a body so respected, de-

mands; although I have been severely pressed with labors since the receipt of your letter.

Waiving all other considerations, there is one that seems to decide the question presented for my consideration. I cannot persuade myself that duty will allow me, at present, to quit the post which I now occupy. This demands all the time and strength which I can command, and even more, and the same would be the case with the office of Secretary, as I view its duties. I have no alternative, therefore, but to decline the proffered honor.

I beg you to convey to the Board my deep sense of obligations for their generous offer, and my strong desire that their minds be directed to the choice of one younger, more vigorous and competent than myself for this important post.

With the highest respect, I subscribe myself, sincerely yours,

EDWARD HITCHCOCK.

Hon. Amasa Walker, *Secretary, &c., &c., Boston.*

This letter was accepted, and the further consideration of the subject postponed to the meeting to be held on the first day of December then next ensuing. A committee of five was chosen to report, at that meeting, the name of some suitable person to act as Secretary of the Board.

A committee was also appointed to consider the expediency of preparing a manual on agriculture for the use of common schools; another, on the best means of promoting the interests of agriculture in the State by public lectures.

The Board met again on the first Wednesday of December. At this time Mr. Wilder, from the committee on the nomination of a permanent Secretary, submitted the following report:

The committee to whom was referred the nomination of a permanent Secretary of this Board, respectfully report: That the names of several distinguished persons have been presented, and their qualifications have received the consideration of the committee.

The committee regret that they have not been able to agree upon a nomination, and they respectfully ask for further time.

In consideration, however, of the fact that the annual abstract of the returns of the county societies, and the Report of

this Board, must soon be put in course of publication, the committee recommend that the present Secretary *pro tem.*, Hon. Amasa Walker, be requested to make up the compilations of the agricultural transactions of the Commonwealth for the year 1852, together with the Report of this Board, and to perform such other duties as are incumbent on its Secretary.

This report was accepted.

A committee appointed to nominate members of the Geneneral Board of the United States Agricultural Society, reported the names of J. W. Proctor, Essex Society, H. W. Cushman, Franklin Society, Simon Brown, Middlesex Society.

The report was accepted, and the above named gentlemen elected.

The committee on public lectures reported in favor of calling the attention of the people to the importance of having lectures on agriculture form a part of the course of all lyceums and similar associations in the rural districts of the Commonwealth.

This report was accepted and referred to a committee, who subsequently issued, through the agricultural papers, a notice calling the attention of the friends of agriculture to the subject.

The fifth and last meeting of the Board was held on the 12th instant. The attendance was large, only two members being absent.

Reports were received from the several committees appointed to visit the exhibitions of the different societies.

These reports, or such extracts as may be deemed expedient, will be published in the Transactions of the Agricultural Societies now being prepared by the Secretary *pro tem.*

Essays were read by several gentlemen to whom subjects were referred at the second meeting of the Board. These, too, (or extracts from them,) will appear in the annual transactions.

The election of a Secretary was again taken up, and on motion, it was voted, "that the appointment of Secretary be postponed until the next meeting of the Board, and that the present Secretary continue to act until a permanent Secretary is chosen, and the further action of this Board."

The committee on the introduction of an elementary work into common schools, submitted the following report:

The committee who were instructed to consider the expediency of introducing to our public schools the study of the elements of agricultural science, report:

That studies of this description might be attended to with much benefit under competent teachers. The surprise is, that they have been omitted so long, while so many of less practical utility have been introduced.

Probably the want of text books adapted to the understandings of pupils has been one cause of this.

The committee have examined "The Progressive Farmer," by Prof. Nash, of Amherst, and think it better adapted to the wants of the community, than any work of the kind that has come to our knowledge.

J. W. PROCTOR,
E. HITCHCOCK,
S. REED,
} *Committee.*

Dr. Hitchcock, having been requested, at a previous meeting, to present his views on some topic connected with the improvement of agriculture, read the following,

ON FARMERS' INSTITUTES.

Since the last time I attended a meeting of the Agricultural Board, I have had an opportunity of witnessing the operation of a Teachers' Institute, under the admirable management of the Secretary of Education, and I was impressed with the great and salutary influence which such a system must exert upon the cause of education in Massachusetts. But another thought has occurred to me. Why should we not have Farmers' Institutes, as well as Teachers' Institutes. We have agricultural chemists, scientific farmers, practical farmers, botanists, vegetable and animal physiologists, geologists, meteorologists, abundantly qualified, and, I doubt not, willing to go into the different districts of the State, and instruct the farmers there in their several departments. During the winter months, I presume that multitudes of farmers, with their families, would assemble for this purpose; nor can I doubt that their hospi-

tality would be quite as generous as are experienced by the strangers who attend the Teachers' Institutes. By such a system the following objects would be accomplished.

1. A vast amount of knowledge concerning the principles of agriculture could be imparted to the farmers in every part of the State. It would, in fact, form an *ambulatory agricultural school*, where the young, especially, would learn very rapidly from the best masters.

2. It would give an opportunity to men well qualified, after looking at the chemical and geological constitution of the soil, to make suggestions to the farmers of the different districts as to improved modes of culture.

3. It would furnish a good mode of communicating intelligence to the farmers of discoveries and improvements in agriculture, of distributing new varieties of seeds, and making known new and improved breeds of domestic animals.

4. It would probably bring to light new manures in different parts of the State by the researches of the lecturers, and of the farmers after they were put upon the track.

5. It would awaken a deeper interest in agricultural pursuits, and give them increased respectability.

6. Opportunity might be given during the meetings of the Institute for visiting some of the best conducted farms and gardens in the vicinity, and thus witnessing the operations of scientific principles.

I know of but two difficulties in the way of the immediate adoption of such a plan. One is, that as yet we have no Secretary to the Board, an indispensable pre-requisite. Another is, that we have no pecuniary means placed at our disposal for any purpose. The first difficulty, I trust, will soon be removed, and for getting rid of the second, I take the liberty of suggesting that a petition be presented to the legislature, now in session, for the means requisite for establishing and putting in operation a Farmers' Institute.

Respectfully submitted,

EDWARD HITCHCOCK.

Amherst College, January 11, 1853.

Since the organization of this Board, one of its members, Hon. John W. Lincoln, a most valuable member, has been called away by death. Greatly devoted to the cause of agricultural improvement, a man of extensive information, and high practical ability, the loss of Mr. Lincoln is severely felt, not only by his immediate associates, but by the community in which he lived, and the State, which, in various public offices, he long and faithfully served.

The vacancy thus occasioned has been filled by the election of Harvey Dodge, of Sutton.

Another vacancy has been caused by the removal of James S. Grennell from the Commonwealth. No election has taken place to fill this vacancy.

In reviewing the proceedings of the Board, it will be observed that much difficulty has been encountered, notwithstanding the most untiring efforts, in obtaining a person, in all respects, qualified to discharge the responsible duties of Secretary.

Regarding the success of the enterprise as depending, in no small degree, upon the character and ability of the person to whom its chief interests are intrusted, the Board have placed the standard of qualifications high. They feel that the Secretary should be, not only a man of science, but of business talent; not only a theoretical agriculturist, but a practical farmer.

To find these qualifications united in one man at the present time, when comparatively few scientific men are connected with agriculture, has been no easy task. There are such men in the country, but most of them occupy stations of profit and influence beyond the reach of this Board. They do not, however, despair. Their expectations now are, that the office will be speedily filled.

In compliance with the terms of the law under which they act, the Board have now "submitted a detailed report of their proceedings;" and it only remains for them "to make such recommendations and suggestions as, in their view, the interests of agriculture may require."

The annual returns of the several agricultural societies are now required by law to be made, on or before the tenth day of January in each year. This, under the present organization, is an inconvenient arrangement.

A part of this Board are *ex officio* members, whose time of service expires at the close of the political year, and thus a change of members is likely to occur at the very time when the returns are coming in.

It is desirable, on many accounts, that the report of this Board, like that of the Board of Education, should be made up by the 1st of January. But this cannot be properly done, unless the law is so altered as to require the several societies to make their returns as early as the first day of December. This, it is believed, will occasion no inconvenience to them, as their exhibitions are usually closed as early as the 1st of November, and generally much earlier. The proposed change would also enable the Secretary of this Board to get out the annual transactions soon after the assembling of the legislature.

As a great want of uniformity exists in the manner in which the returns of the different societies are now made up, it is suggested, that if the Board were authorized by law to establish the needful formulas, and furnish to the societies the requisite blanks, a very desirable improvement might be made in the character of their annual statistics. They would be rendered much more available and useful.

It would seem to be the right, as well as the duty, of the State to do this. Agricultural societies, like the common schools, receive the bounty of the Commonwealth. Should they not, like the schools, be required to make uniform and reliable returns?

The importance of this measure is deeply felt by those acquainted with the chaotic and imperfect state of the returns now made.

In closing this report, it is deemed proper to add, that this Board owes its existence, in a great measure, to efforts made by the friends of agriculture in 1851. On the 20th of March, of that year, a large convention of gentlemen from all parts of the State assembled at Boston, and organized a voluntary association, under the name of "The Massachusetts Board of Agriculture." This Board, although unaided by the State, carried on a series of extensive operations through the year, appointed committees to visit and report upon all the exhibitions of the different agricultural societies, and by its vigorous efforts aroused so great an interest in agricultural affairs, that at the

session of 1852, the legislature was induced, with great unanimity, to establish the present Board. That act has given a still greater impetus to the cause, and it is evident that the time has now come when the public mind is awakened, in some degree, to the great importance of agricultural education. The people begin to call for knowledge; begin to have faith that science can do something for the farmer, as well as for the mechanic and artizan.

Information, in one form or another, is what the farmer needs. He must have it, and it must be brought to him. He cannot resort to colleges. The mass of the people must be educated at home, or not at all. We see and feel this in regard to common school education. So it must be with knowledge on the subject of agriculture. By Farmers' Institutes, by public lectures, by its introduction into schools, and all the usual modes of diffusing information, the science of agriculture must be made familiar to the people, a majority of whom are employed in that branch of industry, and all of whom have a direct or indirect interest in it.

Respectfully submitted,

AMASA WALKER, *Secretary pro tem.*

Boston, Jan. 13, 1853.

REPORTS OF DELEGATES.

Soon after the organization of the State Board, a delegate was appointed to attend the exhibition of each Agricultural Society. Most of these delegates attended to the duty assigned them, and presented reports which were accepted by the Board, and are published herewith, or such extracts from them as our space will allow.

DR. HITCHCOCK'S REPORT.

EXHIBITION OF THE ESSEX SOCIETY.

Agreeably to the request of the Board of Agriculture, I attended the Annual Exhibition, or Fair, of the Essex Agricultural Society, in Lawrence, on the 29th and 30th of September last.

From the opportunities which I have had of passing several times through this county, within the last twenty years, from the unusual intelligence and public spirit which I have ever found characteristic of its inhabitants, and from my personal acquaintance with the present officers of the society, I confess that I anticipated that this annual festival would be of a high grade, and I was not disappointed.

There was, however, little in the exhibition that was peculiar, and therefore I can hardly be expected to go into much detail, especially as the Secretary has given a judicious and lucid report of the proceedings.

It is certainly an interesting fact, as stated in this Report, that not less than seven thousand visited the spacious hall in Lawrence, devoted to the exhibition, although a fee was demanded, which realized to the Society the sum of $700. And such a gathering was the more impressive to me, when I recollected that where that hall stood, and the city that surrounded it, was only a few years since a dreary plain. I could not but exclaim, "Essex County knows how to grow cities as well as fruits and grasses."

The brilliant Address of General Oliver, on this occasion, dwelt on the subject of agricultural education: which I am glad to say has been the theme of two-thirds of the studied and extemporaneous addresses which I have heard at agricultural fairs for the last four or five years. Such facts show the state of public sentiment in the State on this subject, and my conviction is, that did the government of this State know how general, I might say, almost universal, is this sentiment, they would at once yield to the public will and establish an agricultural school or schools, such as would satisfy the demand of

our intelligent population. Just so long as this is delayed will the brightest days of our agricultural prosperity be kept back. All other means will, in my opinion, be insufficient without schools.

I noticed that the principal field devoted to the spirited ploughing match was in many places full of drift, and I was interested to see how adroitly the ploughmen contrived to turn strait furrows in spite of frequent bowlders. I was struck with the marked superiority of the ploughs over those I had seen employed in Europe, especially on the continent. In the vast meadows along the Rhine I had seen fine ploughing; but an American farmer would laugh at their ploughs, and I think it would have been an amusing sight if some of those implements, with Belgian or Rhenish farmers to guide them, had been present attempting to compete with the farmers of Essex in a field abounding with pebbles and bowlders.

It was interesting, at this exhibition, to see manufacturers and farmers brought into such close and harmonious juxtaposition. This is just as it always should be: that is, these two great interests should mutually sustain each other. The mechanics of Lawrence did not fail to adorn the walls and tables of the hall with rich specimens of their labors.

Of the agricultural products exhibited, I thought the fruits and garden vegetables the best. And if I do not mistake Essex County is distinguished for the superiority of her pomological and horticultural products. Whether this is owing to higher skill and greater diligence, or may in part be attributed to some peculiar ingredients in the soil, is a point not easily settled. But I will venture a suggestion. Essex County, more generally than any other part of the State, is based upon unstratified rocks, such as granite, syenite and trap. The two predominant minerals in these rocks are feldspar and hornblende —the first containing at least fifteen per cent. of potash and one or two per cent. of soda; and the latter seven or eight per cent. of lime. May it not be, that we have in these ingredients of the rocks, especially the potash, which gets into the soil by decomposition, more or less, one of the secrets of success that has attended the cultivation of fruits and garden vegetables in Essex? The best fruit orchards that I have seen are situated upon stony and uneven ground, and where the bowlders or the

ledges abounded in feldspar or hornblende; perhaps I ought to add mica slate regions; and here, too, in the mica we have from eight to ten per cent. of potash. May there not be some connection between the occurrence of alkalies in the subjacent rocks and success in these departments of culture?

Let me add another suggestion. If any such connection should be made out, (or even if it is not,) may not farmers, whose farms abound in feldspar and hornblende, find it for their interest to seek those spots where the rocks are decaying, and by collecting the disintegrating matter spread it over their land as they would bone dust or ashes? Or is it not possible that it will be found to pay the expense in such a State as Massachusetts, where feldspar is so abundant, to resort to a method that has been proposed, and to some extent adopted, in other countries, for decomposing this mineral, viz.: by burning it with lime?

But I will add no more on a subject that seems hardly appropriate for this report.

Respectfully submitted,

EDWARD HITCHCOCK.

Amherst, Jan. 1, 1853.

P. S.—I have also attended the Agricultural Fair of Norfolk County, in Dedham, on the 29th of September, and had some opportunity of glancing at farming operations in that county. It is not for me to report upon the Fair, which will be done by a colleague. But I feel constrained to advert to the admirable arrangements which were made at the exhibition, superior to any which I have ever witnessed on similar occasions, and which seem to me to be greatly needed in all our societies. At Dedham everything seemed to be in place, and every man knew what he was expected to do. It seemed to me an interesting example of the manner in which military rules may be applied to regulate large gatherings of citizens.

It was gratifying also to see what progress has been made in the cultivation of farms, both in Norfolk and Essex Counties, since the time, more than twenty years ago, when, in traversing the State, I had an eye upon these things. I did not

suppose that we have in New England, farms and gardens that will compare so favorably with the best I saw in Europe, as many will now in Norfolk and Essex.

MR. WALKER'S REPORT.

EXHIBITION OF THE MIDDLESEX SOCIETY.

The Fifty-eighth Annual Festival of this Society, the oldest in the Commonwealth, was held at Concord, on the 6th day of October last.

An immense concourse of people were in attendance from all parts of the county. The day was favorable, and the arrangements having been made with great judgment by persons long familiar with the details of such an exhibition, and executed by those accustomed to perform like duties, everything was conducted with order and decorum. No time was lost, no confusion occurred, and ample opportunity was given for all the proceedings necessarily connected with the occasion.

The ploughing match was first in order. To this there were forty-three entries from all sections of the county, and no less than thirty-seven teams actually engaged in the contest; a larger number than we have witnessed in any ploughing match in the State, indicating very unequivocally the great interest taken by the farmers of Middlesex in this part of their exhibition. The scene excited great interest.

The trial took place in an extensive field lying upon one of the banks of the Concord River, belonging to the gentleman who represents the Society at this Board, and was admirably adapted to the purpose. A more spirited scene has never, perhaps, been exhibited on any similar occasion.

The large number of competitors, the excellence of the teams and ploughs, and the numerous spectators gathered about the spot and looking on from every little surrounding eminence, all combined to make the display one of unusual interest. The work was well and rapidly executed. One team accomplished its share—one-eighth of an acre—in seventeen minutes, and all was done so neatly and expeditiously, that it must

have been no easy task for the judges to award the premiums to entire satisfaction.

The trial of working oxen next followed, and twenty ox teams and four horse teams were entered. The weight to be drawn was 7,200 pounds. The manner in which the work was executed gave satisfactory evidence that the teams were powerful and well disciplined, the drivers skilful and accustomed to their work.

The show at the pens was very fine; much good stock was entered, among which were several valuable animals, both imported and native. Had the undersigned expected to be called upon to report upon this exhibition, he would have taken such notes at the time, of this part of it, as would have enabled him, in some measure, to do it justice.

The display of fruits, flowers, vegetables, &c., &c., held in the town hall, was truly grand, and we were made to feel that this was the exhibition of a society long established, and in one of the most favored portions of the Commonwealth; for here were gathered together such a vast collection of products, and of such rare perfection as can only be found in a region where long attention has been paid to the cultivation of both the garden and the farm.

Your committee cannot particularize. The apples, pears, peaches and grapes, were in great variety and unusual excellence. Of apples, especially, there were numerous specimens of uncommon size and beauty. The Hubbardston Nonesuch, which in some parts of the State is but little cultivated, seemed here to be one of the principal, and certainly one of the largest and finest fruits. For raising apples, Middlesex County stands very high, and will compare favorably with any other in the State.

When the exhibition was over, a procession was formed, and, preceded by a band of music, marched to the church, where an excellent Address was delivered by Hon. Luther V. Bell, principally upon the influence which the science of Chemistry may exert on Agriculture. It was listened to with great attention; after which the members of the society and invited guests repaired to the hotel, where a dinner was provided, and the usual speeches, sentiments, &c., &c., were offered.

The occasion throughout was one of high gratification to all who feel an interest in the progress of agriculture. The Middlesex Society possesses large resources. It ought to do much for agriculture, for it has been long in operation; it is situated in a rich section of the Commonwealth, it embraces a large number of gentlemen of talent, fortune, leisure, and taste. It is under high obligations to the cause; and, judging from its last exhibition, we think it will not fail to accomplish all the friends of agriculture and horticulture have a right to expect from it.

Respectfully submitted,

AMASA WALKER.

MR. BREWER'S REPORT.

EXHIBITION OF THE WORCESTER WEST SOCIETY.

The Worcester West Agricultural Society held its First Exhibition at Barre, on Thursday, the 30th day of September last. It was one of those delightful autumnal days which, among mountain scenery, lends a most pleasing influence to the mind, and leads it, by genial associations and the beautiful appearances of nature, to the direct source of all our higher and nobler aspirations.

The arrangements for this occasion were judiciously made, and anticipated every contingency, giving to each distinct feature its appropriate hour. These were duly recognized by every contributor, and well executed by the efficient marshal of the day and his assistants. The exhibition was sustained with deep interest in all its departments, and gave satisfactory evidence that the members of this society appreciate their interests in sustaining and enlarging this model of their future operations. Some of the prominent attractions of the day were, in a particular manner, the spirit of harmony and good feeling which seemed to pervade the mind of every member of the multitude here collected. A disposition to please and be pleased was the predominant feature, and spread its happy influences over all.

The ploughing match was nobly contested by the several competitors, maintaining the character so long established by the Worcester County farmers for their improved ploughs, their well-disciplined teams, and skilful ploughmen.

The exhibition of swine was an interesting feature of attraction, both in point of numbers as well as their condition, and gave evidence that they would soon supply an additional *rib* of comfort to their respective owners. Most of them on exhibition were fine representatives from the Suffolk family.

The sheep pens, too, had their distinct features of interest, in mutton, lamb, and wool. Each was represented by the respective candidates for the premiums offered; and one in particular, of surpassing size and length of fleece, the hero of the flock, seemed determined to demand more than one. And his shepherd too, like some others, who are accused of caring more for the fleece than the flock, seemed resolved on having one good *clip* by securing two years' fleece at the next shearing.

The show of bulls was fine; but for working oxen, milch cows, beef cattle, and young stock, it would hardly sustain the high character which this portion of the county has for so long time had awarded to it in this interesting department.

The show of horses was the all-absorbing feature; its unabated interest was sustained through the day, and awakened the inquiry in my mind whether it was not absorbing too much interest in the minds of our farmers generally.

The show of poultry was quite limited in numbers, and but few families were represented. The bantams were vociferating their repeated challenge, and were occasionally responded to by some hoarse citizen from the Oriental shores, or by the shrill precaution to *quit*, *quit*, from Turkey. From the flat-footed family there was no delegate present; possibly from the fact that the president and secretary of the society are both of them eminent, as well educated physicians, and would have no sympathy for *quacks*.

The hall devoted to Pomona was very attractive. The contributions from her store house were magnificent, embracing all the varieties most esteemed by her friends, and many such were here whose sincere attachments to her were demonstrated in this familiar manner. But the clock has given the signal to leave these external enjoyments, which have so long feasted

the eye, to dispose of those so richly prepared for the inner man. Four hundred successful competitors for seats at the table were called to order, and as a committee of the whole on the state of the union, (after the Divine blessing had been fervently invoked by the venerable chaplain of the day, Rev. Dr. Thompson,) took up the bill of fare before them, which was examined and freely discussed by articles, separately. The Hon. Amasa Walker was now introduced to the audience by the president, and finished the duties of the day by his Address, which was listened to with that intent interest which is his—peculiarly his—to arouse and sustain.

Respectfully submitted,

FRANCIS BREWER.

GOV. BOUTWELL'S REPORT.

EXHIBITION OF THE HAMPSHIRE, HAMPDEN & FRANKLIN SOCIETY.

The undersigned having been present at the Annual Fair of the Hampshire, Hampden and Franklin Agricultural Society, and having been requested by the Board of Agriculture to report thereon, though not originally charged with that service, has the honor to submit an imperfect statement of the exhibition of said society.

The exhibition continued two days, but the undersigned was present only on the last. He is unable to speak of the exhibition of 1852, in comparison with the exhibition of the society in previous years; but he feels justified in saying that it was altogether creditable as compared with other societies in the Commonwealth.

The department devoted to manufactures was unusually complete and attractive; that of fruit and vegetables appeared to correspond very nearly with the first class exhibitions of other societies, while the show of horses was superior to any which it has been the fortune of the undersigned to witness.

The undersigned regrets that he is unable to present a more full report upon the subject committed to him.

GEO. S. BOUTWELL.

MR. NASH'S REPORT.

EXHIBITION OF THE HAMPDEN SOCIETY.

In accordance with the instructions of the Board, I attended the Annual Exhibition of the Hampden Society, at Springfield, on the 29th and 30th of September.

This is an old society; is situated in a fine agricultural district; and has done well in former years. I therefore expected much, and was not disappointed. The exhibition, as a whole, and in each of its parts, was creditable to the society.

Of the show of cattle and other stock, I cannot speak wholly from personal observation, as a part of the animals had been removed before my arrival. What remained would justify the conclusion, that the exhibition had been highly respectable, so far as the character of the animals was considered, though I understood, that not as many were entered as on some former occasions.

The trial of draft oxen took place on the afternoon of the first day. Great interest was manifested in this part of the exhibition. It consisted in taking up and down State Street, with single pairs of oxen, many of which were not large, a cart loaded with pig iron, weighing 5,300 lbs. As this was to be taken up and down a rather steep hill, turned round and backed; and especially as it had to be done in a press of spectators, which was troublesome to both the teams and drivers, the trial seemed rather a severe one. Such a test may have been wise on that occasion. The known sound judgment and practical good sense of the officers of the society decides that it was. But it would not be for the interest of farmers to load their cattle as heavily more than one day in the year. The ox is a faithful animal. He will do his utmost when bid. But he cannot do it often without injury to himself and loss to his owner. On this occasion the cattle performed well, and the drivers appeared like men who understood their business. If there was anything to complain of, it was, that the spectators did not allow sufficient room. Something was due to the men, who had brought their teams, some of them from great distances, for the purpose of exhibiting their working qualities.

The exhibition of fruits was good. Of these, there were 234 entries. In vegetables, of which there were 306 entries, the Hampden Society outdid anything I have witnessed otherwhere. And as was to be expected, the department of the mechanic arts was nobly represented. At the show of horses, which took place on the morning of the second day, 85 horses, mostly carriage and draft horses, were exhibited. Many of them were fine animals; were well trained, and evinced an advanced stage of improvement in this branch of rural economy.

The dinner, at Washington Hall, was well "got up," and well "put down;" after which, a very earnest and interesting Address was delivered by Wm. S. King, Esq., of the Journal of Agriculture on "The Application of Mind to the Cultivation of the Earth." Ex-Governor Briggs followed Mr. King, in his usually happy style; and the company then adjourned.

The gathering was uncommonly large. The utmost good order prevailed throughout. Whether it was owing to the vigilance of the city government, or to the general good character of the multitudes assembled, or, what is more probable, to both, I know not, but for some reason, there was manifested a sobriety, an abstinence from intemperance, profanity and every species of rudeness, which struck me as eminently worthy of remark. Too much praise cannot be given to the president of the society, Thos. J. Shepard, to its other officers, and to citizens of Springfield generally, for their successful efforts to make a *good time* for the assembled thousands.

J. A. NASH.

MR. PAGE'S REPORT.

EXHIBITION OF THE FRANKLIN SOCIETY.

I suppose that the main object of this Board in appointing delegates to attend the exhibitions of the several agricultural societies, is, to ascertain their actual condition. I shall therefore confine myself to a plain statement of such facts as came under my observation, adding such remarks as may occur to me.

The Cattle Show and Exhibition of the Franklin County Agricultural Society were held at Greenfield, on the 29th and 30th days of September. I reached the town at about half-past eleven o'clock of the first day. I found the streets filled with people, all bound in one direction, and evidently intent upon some interesting objects. Arrived at the points of attraction, my attention was first called to a large number of very handsome oxen in the yoke. They had apparently been connected in regular column, but were then about taking their departure from the field in larger or smaller detachments, some of them to take part in the drawing match. Many, it was said, had already gone. I should judge that there were then upon the ground at least sixty pairs. The town teams were, to me, a novel and interesting sight. I was told that Shelburne furnished 44, and Conway 24 yokes, and that fewer towns exhibited than on former occasions.

Of domestic fowls, a few specimens were exhibited, of excellent quality.

The swine were not numerous nor remarkable. Their breed was not stated, nor was I able to detect it. Some of them were fine animals.

Of sheep there was not a great number, but they were more numerous than we usually find in the eastern counties, and some were of great merit.

In the exhibition of milch cows, I was disappointed. I knew that Franklin County was a good grazing country, and I expected to see a large number of cows of prime quality. I think not more than half a dozen were on exhibition, and none of them struck me as of extraordinary merit. I heard some reasons suggested why that part of the exhibition was not better, and among others, the extreme drought of the summer. But, after all allowances, the farmers of the county did not do themselves justice in that particular.

In heifers and steers the show was equal to any that I have seen. There were some 10 or 12 bulls in the pens, of various ages and sizes, but none that appeared to me remarkable for their good points. In so good a farming district, I should have been gratified to find evidence of greater attention to the qualities of breeding stock.

The fat cattle were not numerous, but good. Among them

was a pair of oxen, owned by Mr. Consider Arms, of Conway, weighing 5,500 lbs., the finest pair of fat cattle I have ever seen.

Of horses I was informed that there were more than forty entries. Those animals were exhibited to great advantage in an assigned portion of the public street. They were put through their paces in harness and under the saddle, and afforded the committee a much better opportunity to judge of their qualities than is found when they are confined in the pens, as is usual in most counties. An exhibition of that most interesting and valuable animal both in repose and in motion would be an improvement upon either mode by itself. Among them were some horses of rare beauty.

I was unable to attend the drawing match, which was said to have been well contested by about twenty teams.

The ploughing match, which is usually so attractive a feature in our exhibitions, was a failure. Instead of the large number of competitors which I had expected to see, only seven teams entered the lists. From some cause which I cannot explain, the proprietors of all ploughs but Ruggles, Nourse & Mason's withdrew from the contest. The few who remained performed their work well.

At the town hall, the exhibition of fruits, vegetables, the products of the dairy, fancy articles, domestic manufactures, the mechanic arts, &c., was of the most gratifying character.

It has been a fault that our farmers have been unwilling to present specimens of the common products of the farm. That fault extends in some degree to Franklin County. A considerable quantity of vegetables, however, was exhibited, but little space was allowed them. The object seemed to be to exhibit specimens of monstrous growth rather than fair samples of staple crops. An improvement might be made in that respect in all our societies, including the leading horticultural society in the State.

The exhibition of apples was admirable, showing that the county is well adapted to the growth of that most valuable of our fruits. The varieties were numerous and the qualities of each excellent. Of pears, peaches and grapes but few were on the tables, and those not of remarkable quality.

In butter, cheese, bread, various articles of domestic manufacture, and in the mechanic arts, the exhibition was rich.

There were many things deserving of special notice; but I must forbear. It is but just to say that here, as everywhere and always, woman had done and was doing her full share to promote the honor of the county and contribute to the pleasure of visitors.

There was too little space for the exhibition of so great a variety of articles. The society needs a much larger hall in order to do justice to the men and women who do so much to make the show attractive.

An Address was delivered by Professor Mapes, and was, as might be expected, full of useful hints and well calculated to stimulate thought in the farmers of Franklin.

The dinner, provided at the Mansion House, by Mr. Field, was excellent, and partaken of by as many happy and thankful people as could find seats at the table. There was but one thing wanting. The ladies, to whom that society, like all others, owes so much of its success, did not grace the tables by their presence.

This was the third annual exhibition of the society. Its affairs seem to be managed with great skill and judgment. With a single exception, that remarkable order and decorum, which I have noticed on similar occasions elsewhere, prevailed here. All classes seemed to enter into the spirit of the day, and to do all in their power to make the exhibition successful and the occasion agreeable.

The Franklin County Society promises to be one of the most attractive and flourishing of the sisterhood of kindred associations.

J. H. W. PAGE.

DR. REED'S REPORT.

EXHIBITION OF THE HAMPSHIRE SOCIETY.

We speak of our County Agricultural Societies as a band of sisters. Never was the epithet so emphatically just as at this time. The Hampshire Society is one of this group. Of that we are now to speak, and would remark, in passing, that

we found a cordial and welcome greeting from the officers of the society, and other citizens of Amherst. We saw enormously long strings of fine oxen with which they are wont to fill the common on such occasions, and the fine specimens of other cattle of various races, ages and qualities; fine horses in large numbers, good hogs, some sheep, and a multitude of the hen family. Two large halls, filled with fruits, flowers, vegetables, grains, agricultural implements, and the various emblems and productions of mechanical skill, were opened to us. Here, also, were found the bread and butter, showing, to our full satisfaction, that the Hampshire ladies well know which side their bread is buttered. Here, also, were gathered the ten thousand other productions of female skill and ingenuity.

The Hampshire Society devote but one day to their exhibition. We were there and reported present in good season. We were first conducted to the exhibition of horses. Between one and two hundred in all were before the committee. They were viewed both standing and in motion, while some hundreds of people were present. The show honored the society. Time allowed but a glance at this lively scene, and we were off to the ploughing match. Our first feeling as we entered the field was surprise at the comparatively small number of spectators,—a few hundreds,—while the ploughing match often brings out thousands. On a fair piece of meadow, a very good number of teams, some of horses, some of a single pair of cattle, and others of more than one, had already made considerable progress in their work. The teams were decidedly good, the ploughs were some of the very best, including the Michigan or double sod and subsoil ploughs, both of Ruggles & Co. and Prouty & Co., and the work, generally, well done in all respects. We noticed one thing we had not before seen. Each ploughman had a person to drive his team. Single teams, well trained, do not require this. If the training is so imperfect as to require this, it is an important practical item, and should be considered in making the awards.

After passing rapidly among the stock of various kinds, we entered the hall where the fruits, and also the lighter works of art were displayed. The crowd here was so great that one

could go only where that carried him, and see only that to which he was presented. Leaving this, we visited the other hall; this was but little less crowded.

A procession was now formed, and marched to the College Chapel, where an Address was given by Mr. Goldthwait, of the Westfield academy. It was a beautiful blending of the scientific with the practical, and reflected credit both on the head and heart of the author. The procession was re-formed, and proceeded immediately to the dinner, at which were assembled some three or four hundred ladies and gentlemen. The award of premiums was made by the several committees, without statements or reasons. A statement of the financial concerns of the society was then made by its president, Mr. Baker. The fund had been raised above the demands of the Commonwealth. In this the ladies had asserted their true rights —the right of being coworkers in doing good. The Hampshire Society presents the beautiful feature of more than two hundred life members from the ladies' circle. Remarks were made by Hon. Edward Dickinson, president of the festal board; Hon. Amasa Walker, Dr. Reed, Dr. Hitchcock, Mr. Golthwait, and others. The remarks were brief but practical and highly instructing.

The day we had enjoyed highly. Everything had been admirably managed. No delays had occurred in any part of the proceedings. The time had been well used, and all used. All which energy, activity and good judgment in a board of managers could do, had been done.

But one thing they could not do. They could not create time, or bring back the shadow on the plate of the dial. Never before have we felt so deeply, as on that day, that less should be undertaken, or two days be devoted to the work.

To dispense with the exhibition of stock would be to give up the society. The halls and the ladies, whatever others may do, the Hampshire Society will not relinquish. It would be the folly of fools anywhere, but in Hampshire, it would be worse than this. The address no one would give up, and the dinner we all love to well. More time, then, must be taken. We believe our Hampshire friends will concur in this feeling. Were the object of the day merely the premiums, it would

matter far less. But this is a mere collateral. The great object is to reach the heart through the eye; to show, that those who see may learn, and go home and not only do as well, but make still further advances. In fruit, for example, an exhibition like the one at Amherst will do more to improve in choice varieties, will set more valuable scions and put out more young trees, than all other causes, acting through the year without the exhibition. Then what an opportunity for comparing varieties, fixing names, ascertaining what kinds are best adapted to the soil and climate of the locality. What a pity, then, that such a collection, after all the expense of gathering, labelling, and arranging has been incurred, should not remain until all who wish have had an opportunity to examine. We place it as a broad axiom, that what is worth exhibiting, is worth holding until it can be seen. In the exhibition was an instrument most beautifully applying the principle of the Pentagraph to landscape drawing, a new application, as valuable and useful, as simple and beautiful; and yet we much doubt whether one-fourth part of those who attempted to examine the articles in that hall even saw it. The same remark would apply to many other articles, both in the halls and out.

We have mentioned our surprise at seeing so small a number, comparatively speaking, at the ploughing. A second thought dispelled that surprise. The people could not be at several places at the same time. The horses were being exhibited, the various animals were coming in and being arranged on the common, half a mile distant. The articles for both halls must be received and arranged. Nearly twenty committees were actively engaged attempting to crowd into one or one and a half hours, abundant labor for four or six. None of these could be present at the ploughing; and they are the persons very deeply interested. This whole competition, into which enter the training of the team, the skill of the ploughman, and the perfection of the plough—the most important implement of the farmer's business—should have been witnessed by every person in the vicinity who owns allegiance to our mother earth, and cheered by the presence of their wives and daughters. Noble deeds on the ploughing field

often find premiums richer than silver and more desirable than cups and spoons.

We have left many points untouched, but our time, like that of our friends at Amherst, is full, more than full. Were it as well filled as theirs, we should feel much better satisfied.

S. REED.

MR. PROCTOR'S REPORT.

EXHIBITION OF THE BERKSHIRE SOCIETY.

This time-honored association held its Annual Show on the 6th and 7th days of October. One of the pioneers, as it was, in agricultural enterprise, it is entitled to all the distinction due to discriminating efforts for the good of the public. Thanks to the vigilant yeomanry of Berkshire for the seed thus early planted, which has so grown and flourished that its branches overshadow the land. The late Mr. Webster, when he met his New England friends at Washington, in June last, happily referred to the Berkshire County Society as the *file leader* of all others in our land, and gave the endorsement of his matchless intellect to the utility of these county organizations. Let those who have the rashness to question their value, reflect on their own comparative ability to judge.

Fortunately there are those still living who participated in the formation of this society, who are able to relate intelligibly the adventures of their youth. It was our privilege to meet one of these venerable men, with locks whitened by the frosts of seventy winters, and hands hardened by the toils of half a century, but with mind and memory bright as a morning in June. Since our visit, a highly interesting pamphlet of sixty pages, published by Elkanah Watson, Esq., the first President of the Society, in 1819, has come to hand, giving the details of the origin of this society, as well as many useful hints for the formation and management of such societies; indicating a clear apprehension of the benefits to be derived from them. There is much to be learned before our ideas on these subjects will be as comprehensive as were those of our fathers.

In addition to the *plough* and the *loom*, paraded in procession at their first show in 1811, was a miniature woollen factory in full operation. What then appeared only in miniature, has since so fully developed its power, as to fill the valleys of Berkshire with beautiful and comfortable dwellings, and to people her hills with a class of independent yeomanry, second to none in energy and intelligence. The men are proportioned to the hills they inhabit. We had *to look up* to get a view of their eyes. The mountain air, and the mountain labor, are admirably adapted to rear a race of men altogether more energetic than those who are pent up in the half ventilated apartments of mechanical industry. More dollars may be earned in such employments, but dollars alone are not the acquisitions to be regarded by the State. That State which would have men worthy the name of men, should have regard to those employments which tend to develop their physical energies, and to fit them to do some service when such services are needed, either in the senate or in the field. How else may we hope to replenish the giant minds of our country, so many of whom have recently been summoned home.

As one passes along the vallies of the Housatonic and Hoosic Rivers, a spirit of improvement is apparent, extending from the mountain tops across the wide-spread plains below, all of which are checkered with luxuriant fields of corn and grain.

The substantial churches erected on the foundations laid by our Puritan Fathers, and the pleasantly located school-rooms in every district, show that the elements of true greatness are here. Where a people have a full supply of the necessaries and conveniences of life, as the result of their own industry, this people are truly independent. More than this leads to temptation, often without deliverance from evil.

A distinguishing feature in the operations of this Society is their system of viewing crops while growing. *One hundred ninety-two* entries of this description were reported by the viewing committee, all of which had been visited by them, occupying at least one week's time. If followed by statements in detail of culture and produce, as they should be, together with a precise description of the condition of the land when the culture was commenced, the time, manner, and depth of ploughing, the kind and quantity of manure applied, &c., &c., a mass of useful

intelligence must be the consequence. This mode of viewing crops partakes of the plan of viewing farms entire, so successfully practised in years past, by the State and some of the County Societies. In the statements thus elicited, will be found a summary of the best specimens of New England farming. Not speculative, but practical, drawn from actual experience.

The entries of animals in the several departments compared favorably with those reported in former years, presenting objects sufficient to absorb the premiums offered, but by no means a full representation of the best. Each of these classes will be noticed by the committees intrusted with this service, with more accuracy and discrimination than is in my power to give. Nor would we presume to put our judgment in comparison with that of these *practical men*, who have spent their lives in the rearing and management of stock. Those of best experience are, or should be, selected for the discharge of these duties.

Our attention was particularly arrested by a milch cow, of native breed, that had yielded 188 pounds of butter in 120 days, with no other feed than common pasture and *four quarts of shorts daily.* When native cows of this quality can readily be found, there can be no necessity of importing *Durhams*, *Ayrshires*, or *Jerseys*, for ordinary dairy purposes. We consider a stock of cows good which yield daily through the usual butter-making season, (from May 20th to September 20th,) on good pasture feed only, one pound of butter each. It is rare to find on a farm half a dozen cows that come up to this mark;—though individual cows may often be found, when full fed, yielding *two pounds* of butter per day. Several such were presented at this show.

As was to be expected in Berkshire, sheep were present in every form and variety: some thirty or forty parcels, exhibited generally in the vehicles in which they rode. An examination under such circumstances, required more skill than we possessed, to speak with confidence of their distinguishing characteristics. The committee spoke well of them.

The competition in the exhibition of horses was truly gratifying; for more than an hour the spacious avenue southwesterly of the Common, in Pittsfield, was crowded with a

multitude of admirers of the movements of these animals. Never have we seen them exercised to better advantage. If we do not mistake, Berkshire is entitled to a prominent position in this department. It was well remarked by the committee, in regard to the competition for these premiums: "The principal benefit is not the taking of the prizes, even though much larger than they are. It is the bringing the animals to the notice of thousands, to whom they would otherwise never be known."

The hall for the exhibition of articles of manufacture, fruits, flowers, &c., was crowded to its full extent, evincing not only the abundance of the supply, but the necessity for enlarged accommodations. Much is to be learned in this department of the exhibition. It is viewed with interest by all, especially by the ladies, where the works of their own hands are displayed. And why should they not be displayed? With a proper arrangement, and a small admission fee, cheerfully paid, it may readily be made a remunerating department. We have known societies who realized enough from their hall for the exhibition of manufactured articles, &c., to pay all their premiums for the season. It is a perfectly fair mode of balancing the account.

On the morning of the second day all hands were on the alert for the ploughing field. There were entered twenty teams —twelve with pairs of horses, eight with pairs of oxen, without drivers. To each was assigned one-quarter of an acre, to be ploughed in fifty minutes, (one hour would have been a better time,) with a furrow slice not less than six inches deep nor more than twelve inches wide; to be laid *flat* by the horse teams, and *lapped* by the ox teams, that opportunity might be given, in the cultivation of the land, to compare the benefits of the different modes of laying the furrow slice. The field was well adapted to the experiment, excepting a want of *proper tenacity in the sod*, a material consideration in judging of the operations of different ploughs. Where land is so abundant, it would seem to be easy to secure a field which is exactly fitted for the purpose, by proper attention in season. We forbear to extend remarks on the ploughing, as full justice will be done by the discriminating judgment of the chairman of the committee, (Judge Bishop.) We were gratified to find, in conspicuous position, our favorite implement, the *Michigan Sod and Subsoil*

Plough. The more we see of its operations the better we like it. For the complete pulverization of the soil it is the "one thing needful." It has within itself principles that will endure. It is not a *mushroom production.*

The form of awarding premiums is a marked peculiarity of this society, worthy of special notice. It has been practised from the beginning. Instead of giving money, a piece of plate of the same value is given. These are delivered by the officers in the presence of the assembly to the successful competitor. The scene is exciting; the interest awakened is intense, both in the *recipient* and in the *surrounding multitude.* If the articles were marked with the name of the society, the recipient, and the time and cause of delivery, it would give additional inducements for their preservation. We were favorably impressed with this mode of award, and believe it worthy of imitation by other societies.

What more interesting sight could be presented on the homestead of the farmer than a closet well stocked with these honorable trophies? The *coarse bunting* taken from an enemy by brute force, often in a contest of doubtful character for honor and propriety, is cherished with a sacred care, from generation to generation; but of how much greater value is the trophy earned by generous rivalry in the cultivation of the arts of peace? Where is the man who would not be proud to transmit an *heir-loom* of this description to his descendants? We can truly say, that if we had a piece of plate, awarded to our father *forty years ago,* as the best ploughman among twenty competitors, we should esteem it of more value than any colonel's commission ever issued by any governor of the Commonwealth, even though it might have the Massachusetts Indian, with his bow and arrow, stamped thereon.

The gratification anticipated from the Address expected of Dr. Lee, of Washington, on this occasion, was not realized. By some accident, there was a misapprehension between the Doctor and the officers of the society. Hence a lesson, never *go far* from home for that which can be quite as well obtained *near by.* We have looked upon the annual address before our county societies as a legitimate production of the county; and in our connection with the administration of the affairs of the Essex County Society, for *thirty years or more,* have adhered

to this rule. If instruction from strangers of distinction is desirable, *the dinner table* is the most convenient medium of obtaining it. Our view of such addresses is so well expressed in the introductory remarks by our friend the late Henry Colman, at Andover, 1831, that we claim the indulgence of quoting his words. "You do not expect," said he, "an oration. Agriculture has little concern with rhetorical flourishes. Determined principles, plain matters of fact, and the results of well-conducted experiments, are most useful." Far be it from us to speak disrespectfully of science in agricultural pursuits,—*real, practical science*, as distinguished from the speculations of *visionary sciolists*. But there are abroad so many fanciful notions, such a propensity to *humbuggery*, even in farming, and by those who really know better; and it is so much easier to indulge in flights of fancy than to engage in well-conducted experiments, that a *fog* has arisen to limit the vision of the inquirer. Practical experience, well-digested, is the information best suited to the tastes of the farmers of Massachusetts; and the most reliable source of information for the instruction of their sons. Whenever the State shall have laid a broad and firm foundation for securing this, she will have done her whole duty—and not till then.

Profiting by the wisdom of the late Lord Timothy Dexter, of Newburyport, who, in preparing his "Pickle for the Knowing Ones," omitted entirely all the *punctuation pauses*, and added a full page at the close, to be applied according to the taste of the reader;—so we have forbore to bandy compliments to those from whom we received kind attentions on our visit at Berkshire—simply saying, that we found the hospitalities of the county *on a par* with other improvements.

Respectfully submitted by

JOHN W. PROCTOR.

December, 1852.

MR. LAWTON'S REPORT.

EXHIBITION OF THE HOUSATONIC SOCIETY.

This society was organized ten years ago by a few individuals of Southern Berkshire; they being fully aware of the benefits arising from properly conducted associations of this character.

And notwithstanding there then existed a well-conducted agricultural society, called the Berkshire County Society, the first organized body that bore the above name in the State, very many of our enterprising farmers and mechanics in Southern Berkshire did not appreciate its worth; being located so far from Pittsfield, the village where its annual fairs were held.

In the progress of this society, the Commonwealth very kindly aided, and adopted her as one of her children; and she now stands side by side with the first in the State.

Her permanent fund is $5{,}316\frac{66}{100}$ dollars, and they hope soon to double that amount.

The Annual Fair of this Society was held at Great Barrington on the 29th and 30th of September, 1852. At an early hour the citizens began to assemble, apparently deeply interested in this grand festival of the farmer.

Various products were brought in from the surrounding country, which soon filled the apartment assigned for them. In the mean time, the ladies were not slow in bringing their domestic manufactures and arranging them in the hall.

The display of the products of the dairy was grand. I noticed some thirty tubs and pots of butter, all of an excellent quality, and nearly as many specimens of cheese; most of which was very rich, with a good flavor, speaking in language that cannot be misunderstood for the ladies of Berkshire.

The exhibition of flannels, carpetings, blankets, and bed quilts, was large, and showed good taste and a thorough knowledge in their manufacture.

There were some beautiful specimens of needle-work and paintings, being fashioned by the skill and good taste of the ladies, and wrought by their delicate hands.

I was very sorry to see this society cramped as they were for room to arrange the different articles brought in for exhibition. Truly they have outgrown their accommodations, and should provide for themselves a large tent or hall for future convenience.

The fruits and flowers were arranged in the hall of one of the village school-houses, some twenty rods from the town hall. The collection of fruits was large and splendid, far exceeding any one of the kind I have seen in the county, while that of flowers was not large, though beautiful and well arranged. I was much gratified to see the famers of Berkshire paying so much attention to the cultivation of choice fruit. The exhibition of pears was not as large as that of other fruits, though there were some specimens of a very fine quality.

The grain crop, owing to the drought, was not as good as in former years; yet the competition was large and spirited. There was some fine specimens of potatoes which appeared as in former years. The crop was good.

The show of cattle was not as large as has been some years past, owing to the drought, yet the beautiful grove a few rods west of the village was probably never before graced with as fine a quality of stock.

I noticed a very fine pair of three-year old steers owned by Mr. M. Laird, of Great Barrington; they were of the first order, and sold on the ground for two hundred dollars.

Some others were very large and nice, which were sold during the fair for prices a shade below.

The competition on sheep and swine was large, and I noticed in particular a sow and ten pigs, belonging to A. F. Barnes of Great Barrington, that were extra. This family was sold a few days after the fair for seventy dollars. Other families of swine were there, of similar beauty.

The exhibition of fowls was large, and occupied a very respectable position on the show grounds.

That of horses was large, and the competitions for premiums closely contested.

The mechanical productions exhibited were small; I saw nothing worthy of note.

The ploughing match, on Thursday morning, was a grand affair. A clear, bright sunshine, beaming upon the valley of

the Housatonic, with a fine, healthy atmosphere, and the thousands who had gathered around the lands struck out for the match on the meadow of Mr. E. Pope, surpassed anything I have seen in Southern Berkshire.

Thirteen horse and five ox teams entered the field and took their lands, one-fourth of an acre each, (the assigned depth of furrow was six inches, and width twelve,) to compete for the prizes, without drivers.

These lands, though alluvial, were hard to break with the plough, being very dry, and having a strong sward; yet the work was done admirably well, and in time, which was one hour, including ten minutes rest.

The spirit and skill of the ploughmen, together with their well-trained teams, interested the large gathering of ladies and gentlemen for one hour, after which they formed a procession, and marched to the Congregational Church, where they listened to an Address delivered by G. P. R. James, Esq., which was interesting, though not practical.

The house was filled, and a large crowd assembled near the speaker's stand, which was at the window of the church.

The reports were then read, and premiums delivered in silver plate. I think this is as it should be, only that the plate should bear the initials of the society.

The dinner, prepared by Mr. A. F. Barnes, of the Berkshire House, was good.

Seldom have I seen as large a gathering, with so little dissipation or disorder.

J. R. LAWTON.

MR. WALKER'S REPORT.

EXHIBITION OF THE NORFOLK SOCIETY.

In compliance with instructions received from this Board, the undersigned attended the Annual Fair of the Norfolk Agricultural Society, held at Dedham, on the 28th and 29th of September last.

The first day was occupied with the necessary preparations

for such an occasion and by the committees in awarding premiums.

The undersigned did not arrive on the ground until the morning of the 29th, when he was received with great courtesy by the Hon. President of the Society at his beautiful marquee. Here he found many of the most distinguished friends of agriculture from all parts of the State, with whom he proceeded to examine the various objects of interest.

The ploughing match was first in order, a large number of powerful and well-managed teams were entered, and participated in the peaceful rivalry. A highly suitable lot of land had been selected for the trial. The scene was highly exciting while in progress, and the work quite satisfactory when completed.

A spading match succeeded. This was something novel, and attracted a crowd of spectators. Numerous competitors entered the lists, nearly all of whom were of foreign birth. The work was executed with despatch, and in a manner which showed great skill and tact, in this department of labor. No part of the exhibition seemed to afford more gratification: and it was generally felt to be a happy conception on the part of the managers, as it enabled a new, and not a small class of the community to share in the competition and premiums of the fair, who would otherwise be excluded. Many a man among us at the present day is master of a spade, and ability to use it, who could not command a plough and team, and has not yet learned the art of managing either. To this class the premiums offered by the society for the best specimen of spading, presented an opportunity of which they gladly availed themselves, and thus took a part in the interesting proceedings. That the influence of this upon those concerned must be of an elevating and socializing character none we think can doubt.

The display of cattle was particularly fine. More blood stock is probably owned in this county than any other in the State. Ayrshires and Devonshires predominate, and many remarkably good specimens of both were found in the pens, to several of which premiums were awarded. The native stock too was excellent, and the whole show of cattle gave evidence that great attention is paid to this department of agricultural pro-

duction, by the wealthy farmers of Norfolk, and no expense spared by them in importing and improving stock.

The show of horses, too, was good. Probably no county can produce finer specimens, both for use on the farm and the road. Many of them were of great value, and altogether they formed such a collection as can only be found in a section of the country where very ample means exist for consulting taste in the selection and rearing of these beautiful and useful animals.

The number of swine on exhibition was greater than we have anywhere else seen. Specimens of the celebrated Suffolk, the prevalent breed, were numerous, and the quality superior. In no part of the State is the raising of these animals carried to greater perfection, and to Norfolk more than any county, do the farmers of the Commonwealth look for the best samples of this kind of stock.

Of the feathered tribe, such numbers and variety were in attendance as gave the most unmistakable evidence that ample provision existed for the celebration of the approaching Thanksgiving in true New England style.

But excellent as were all parts of the exhibition, the most striking was that presented within the great tent, which had been wisely procured for the occasion. One-half of this was partitioned off and set apart for the display of fruits, flowers, vegetables, &c. The show was extensive and admirable, as might be expected in a county where so many of our most distinguished horticulturists and pomologists reside. We found the greatest variety and profusion of all that adorns the garden or enriches the dessert.

Large as was the space allotted to this part of the exhibition, it was thronged throughout the day with interested visitors, who seemed to feel that it was one of the most beautiful and extensive they had ever seen, exceeding that of any other county, and vieing even with that of the State Horticultural Society itself.

At about 12 o'clock a procession was formed, under the escort of a fine band of music, and proceeded to the church, where an interesting Address was delivered by W. S. King, Esq., of Rhode Island, after which the company repaired to the

tent, the remaining half of which, not appropriated to the exhibition of fruits, &c., afforded excellent accommodations for a large company of gentlemen and ladies. After dinner the various premiums of the society were awarded, many speeches made, and sentiments offered by the friends of agriculture present.

In conclusion, the undersigned would remark, that he feels he cannot speak too highly of the very tasteful and excellent manner in which the whole exhibition was got up and conducted. There was, throughout, the most abundant evidence that much skill had been put in requisition, and no expense spared, to render this grand festival of the farmer, what such a festival should be, a source of high gratification and a means of substantial benefit.

The Norfolk Society, although one of the youngest, is already one of the most efficient in the Commonwealth; a large number of the most distinguished friends of agriculture reside within the county, and the people generally take as deep an interest in husbandry as those perhaps of any other section of the State. We might, therefore, reasonably anticipate a fine display of agricultural products and agricultural prowess, and such was the fact.

But while all arrangements were of the most satisfactory description, none were, in our estimation, more deserving of special commendation than the ample provision made for an elegant and full exhibition of the fruits, flowers, vegetables, &c., and the admission of ladies to the public dinner.

AMASA WALKER.

MR. PAGE'S REPORT.

EXHIBITION OF THE PLYMOUTH SOCIETY.

The Annual Cattle Show and Fair of the Plymouth County Agricultural Society were held at Bridgewater on the 7th day of October.

Ploughing Match. I had no opportunity to witness this interesting part of the exhibition, except as I was passing in the cars. A goodly number of teams were quietly and steadily performing their labors as I caught a glimpse of the field, surrounded by a large concourse of spectators. When I arrived upon the spot, the work had been completed. I was informed that sixteen teams had competed for the prizes. The ground appeared to be tough and somewhat gravelly, and well calculated to test the skill of the ploughman. The work was generally well done. Sixteen lots had been ploughed.

Working Oxen. I was not able to witness the trial of working oxen, but I learned from those who were present that about twenty yokes entered the lists, and did credit to themselves and their drivers. Several pairs of promising steers were exhibited.

Cows, Heifers, and Bulls. The exhibition of these animals was not extensive nor of remarkable quality. It was not equal to what I have before seen in the same county. I think I saw but three cows; some of which were, in appearance, of considerable merit. Of heifers and heifer calves there was a larger number, and of better promise. Several bulls and bull calves were exhibited, but, in my judgment, none of remarkable merit, and I am confident that they were not the best that the county could produce.

Fat Cattle. Some fifteen or twenty fat oxen and cows were in the pens, many of which were of good quality, and did credit to their pastures.

Horses and Colts. All of this class of animals which I saw were young, probably twelve or fifteen in number. They promised well, so far as I could judge, but the horse is always exhibited at a disadvantage cooped up in a pen, and without the power to show himself in action. As I have suggested in

another report, it would be well for our societies to arrange to have horses exhibited both in repose and action.

Swine. The show of swine was extensive and of high order. The animals were mostly, in whole or in part, of the Suffolk breed, and I have not seen a better exhibition.

Domestic Fowls. In this department there were presented, in vast number and almost endless variety, ducks, geese, turkeys, hens, of various plumage and form, and promising well for the approaching thanksgiving.

Butter and Cheese. The number of entries of these articles was large, the quality apparently excellent, and highly creditable to the farmers' wives of Plymouth.

Vegetables. The show was good. Many excellent specimens were exhibited, and I was pleased to see that, to a considerable degree, the custom of exhibiting only monstrous productions was departed from.

Fruits. In this department the show was admirable. Of apples, pears, peaches, quinces, plums, grapes, cranberries, &c., a show was made which, in variety and quality, would compare reputably with any exhibition that I have witnessed.

Fancy Articles and Manufactures. In these departments, and especially in articles of domestic manufacture, the exhibition was rich, and worthy of high praise; attesting the industry and taste of the fair daughters, and the skill of the mechanics and manufacturers, of the county.

The dinner was at the hotel. It was conducted in the manner that has, until recently, prevailed in most of our counties. It was a hurried meal, and we proceeded from the table to the hall, where an Address was delivered, and the reports of the committees read.

The Plymouth County Society is one of the oldest in the State. It has ample funds; has been conducted with quiet energy, and has done, and is doing, great good.

It needs more ample room in its hall of exhibition in order to do justice to its numerous contributors and the crowd of interested guests. Confining its exhibition to one day, it is urged on from one thing to another with inconvenient and unsatisfactory rapidity. I think it will soon find it expedient to devote two days to this great annual festival, when it will not

be obliged to deprive itself of the luxury of welcoming the ladies, its most valuable and efficient coadjutors, to the banquet.

J. H. W. PAGE.

MR. SPRAGUE'S REPORT.

EXHIBITION OF THE BRISTOL SOCIETY.

The Annual Exhibition of the Bristol County Agricultural Society was held at Taunton on the 14th and 15th of October.

A cold north-east wind indicated an approaching storm, which came on in the evening of the first day, and continued through the forepart of the second, and consequently the attendance of a great portion of those who lived at any distance was prevented. The multitude in attendance on the morning of the first day gave evidence of the general interest felt on this occasion.

My attention was first directed to the cattle, as the most attractive and most important object to the farmer. I was prepared to see a large number, and a great variety of large, beautiful cattle, and from the well known disposition of the president to have everything in good style and taste, connected with the influence and usefulness of the society, I expected not only to be pleased with the cattle but also with the arrangements made for their being exhibited to the best advantage.

The first object that was presented to my eye, on passing the crowd, was a long, double row of pens, the most rude and unsightly that was ever hurried together by frontier settlers in the wilderness amongst log cabins and rude barns, and this, too, in contrast with the beauty and splendor of the wealthy town of Taunton. There was a large number of young cattle, but few that appeared to possess any great excellence. There were no blood cattle, except two bulls, one belonging to the president, a full blood North Devon of good size and fine proportions—a beautiful animal, every way worthy the owner. The other was a brown or dark color, bearing the name of a full blood Ayrshire. His color and form were not such as I

have formerly seen, or such as are described in the books as of the Ayrshire class.

There was a great number of horses and colts exhibited and some of superior size and appearance. They gave evidence of increased attention to the breeding of this noble animal which ministers so much to the expensive comfort of all.

There was a large number of swine, some beautiful speciments of the Suffolk breed, and others of great excellence.

The feathered tribe flocked here in abundance, to which, however, I gave but little attention.

There were a few sheep exhibited.

The ploughing match was over before my arrival, and the ground being distant I had no opportunity to examine the work. The drawing match was very interesting, twenty or more teams being engaged in it. The load was a wagon with 3,000 lbs. of stone for steers, and another with 6,500 lbs. for cattle four years and over. The cattle were large and of fine appearance and well disciplined, moving in obedience to the motions of the drivers, who appeared to understand their business, and they moved unaided by the whip or noise, and performed their task in the most satisfactory manner. One pair, four years old, weighed 3,300 lbs; another pair, five years old, weighed 3,700 lbs. The three year old steers were of large size, well matched, well disciplined, and performed their part well.

I could but admire the patient and persevering attention of the committee in their unwearied labor in following so large a number of teams down hill and up, for four or five hours, in a cold, north-east wind.

The hall appropriated to articles of exhibition was large and tastefully arranged, exhibiting everything to the best advantage. It would be folly for me to attempt any account or description with the expectation of giving a just idea of the innumerable and beautiful objects spread before the admiring multitude.

The articles of manufacture from those of the most substantial kind, of which Taunton, New Bedford and Fall River abound, to the wares of smaller kind, were worthy of the high reputation they have attained.

The great display of handy work of the ladies, for ornament

and use, demonstrated the laudable interest they felt in the objects of the day.

Then there were vegetables in great profusion, such as squashes, beets, turnips, potatoes, cabbages, cauliflowers, and *some pumpkins*, all of so great a variety and so large a size as to challenge competition.

The president's squashes and pumpkins, as big as half barrels, and other products, evinced his skill in horticulture.

Large quantities of butter, of beautiful yellow color and of rich flavor, with numerous boxes of honey and the honey-comb, added much to the excellence of that department.

The fruit was in great abundance. Individuals brought as many as seventy varieties of apples. Pears also were shown in as many varieties. The grapes, in quantity and richness of appearance, were such as are seldom seen.

The hall, which consisted of two stories, was full of articles and crowded by a large multitude.

The Address, delivered on the second day by the Hon. R. C. Winthrop attracted a large audience, in spite of the driving storm, and was worthy the high reputation of that distinguished statesman.

At the close a procession was formed and escorted by a fine band of music to a spacious hall, where about four hundred persons, consisting of ladies and gentlemen, partook of a sumptuous dinner. The only fault was, the superabundance of good things—and the only cause I found for regret, was, the necessity of leaving the company whilst some interesting speeches were in progress.

This exhibition, as a whole, (those unsightly pens excepted,) was one of the most pleasing I have ever attended. Great credit is due to the president for his untiring exertions to have everything done at the proper time and in its proper order. His kindness and affectionate solicitude for the accommodation and happiness of his invited guests added much to the pleasure of the occasion.

SETH SPRAGUE.

MR. SPRAGUE'S REPORT.

EXHIBITION OF THE BARNSTABLE SOCIETY.

The Annual Fair of the Barnstable County Agricultural Society was held at Sandwich, on the 13th of October last. A cold north-east wind and the threatening aspect of the weather may have prevented many from attending with their offerings. However, there was a respectable number of people present.

My attention was first directed to the place allotted for the stock, which was well arranged, with a set of beautiful, new and well-constructed pens. They were not so well filled, however, as we had hoped to see; but the few animals that were exhibited, gave evidence of the ability of that part of the country to compete with more favored counties.

There were good oxen, good cows, young cattle, and a pair of very large, round-bodied, beautiful steers. A bull was pointed out to us, belonging to the society, as being of pure Ayrshire blood, whose color and general appearance was not such as we have before seen.

There were present a goodly number of horses and colts, a few sheep and swine, and several lots of fowls. Of the quality of this part of the exhibition, we do not pretend to judge, as we have no great fancy for the flat-breasted, long-legged, awkward birds, now held in such esteem. To us, our full-breasted, well-formed, lively, native fowls, look far better.

The ploughing match was to come off at ten o'clock, but did not commence until after eleven. There entered the list, five single ox teams and two horse teams, all having drivers excepting one. The contest was spirited. The ploughmen exhibited much skill and activity, and, considering the nature of the ground, which was not favorable to smooth work, it was well done. Most of the ploughs were small and short, and all, with one exception, without wheels,—such as we did not consider the best for ploughing greensward. The oxen were of good size, and some of them superior; but the yokes, some of them, we thought small and unsuitable for the size of the cattle. Their discipline did not appear to have been perfect.

We noticed one pair of cattle of fine appearance and large size, that worked, for some cause, so uneven as to bring one ox at least one foot behind his mate.

As soon as the ploughing was over, we hurried to the spot appointed for the drawing match, which was to take place at twelve. Waited until one, and there being no appearance of committee or teams, we repaired to the hotel, where we found the time appointed for dinner better kept. We were served with a very good dinner at Hon. E. Pope's hotel, which we should have relished better if it had been spiced with a few short speeches from some of the Cape Cod farmers. Dinner over, we were escorted by a good band of music to the town hall, where a well written discourse was delivered to an attentive audience, by Simon Brown, Esq., editor of the New England farmer. After which, the premiums were announced.

The hall appropriated to manufactures, fruits, articles of the dairy, &c., was not large, but was well adorned by the skill and industry of the ladies, with a variety of articles. The few articles of mechanical skill exhibited were of superior make and beauty.

We saw but little fruit and few lots of butter, which forced on us the conviction that the people in that vicinity took little interest in the object of the society, as their orchards, gardens and pastures gave evidence of their ability to make a fine display, equal at least to some of their neighbors.

On the whole, we were impressed with the thought, that though farming may have been conducted with some profit to the laborers, yet for causes which are evident, they have not entered into the spirit of progress and improvement manifest in some other counties.

Their territory is properly called the Sandy Cape, and can never become a good grazing district; but in other respects is susceptible of as much improvement as other parts.

Good crops of corn and rye are raised on these dry, sandy hills, and their statistics bear a favorable comparison with their neighbors. Their intervales are well cultivated and productive. Attention is being paid to the clearing of swamps and applying mud and peat to improve the hills.

There are few who rely much on the land for their support. Great numbers of the male population have spent the best of

their lives in ploughing the ocean, instead of the land. They leave their homes at an early age, and thus young are thrown upon the resources nature affords them. No portion of the world has produced so large a number of energetic, skilful sea captains, and enterprising and successful merchants, as the Sandy Cape.

We were treated with great kindness and much courtesy by the President, C. B. H. Fessenden, Esq., and other gentlemen, which added much to our pleasant visit.

SETH SPRAGUE.

ESSAYS

ON AGRICULTURAL SUBJECTS.

Soon after the organization of the Board of Agriculture, several subjects which were deemed most worthy of particular attention, were referred to different individuals, with the request that each would furnish an Essay thereon for the use of the Board. In compliance with this request the following were presented, adopted, and are herewith published.

ORCHARDS.

BY JOHN C. GRAY.

In treating of the subject which it has pleased this Board to assign to me, I have little hope of saying anything novel or striking, and may perhaps make some statements, or advance some opinions of disputed correctness. The theme is certainly a most extensive and interesting one, but it is anything but new or untouched. It might be thought, that I should best discharge my duty by simply referring at once to some standard authority; but this Board have a right to command my best services, and anything which I may offer will be cheerfully submitted to their comments and correction. The raising of fruit trees is a branch of agriculture which engaged the attention of our Puritan fathers at a very early day, and their progress therein, was, all things considered, truly surprising. The credit of taking the lead in this most pure and refining, as well as delightful and profitable, department of industry, is due, if to any one, to John Endicott, whose grave was left unmarked

by any monument, but whose venerable pear tree yet survives the lapse of seven generations of men, to bear living testimony to his tasteful and benevolent industry. His example soon found many followers, and even in the first hundred years of New England history, all the fruits generally raised in English gardens, were commonly cultivated here. Our horticulture received an important accession on the arrival of the French Huguenots in the early part of the eighteenth century, who brought with them their national taste for fine fruits, and introduced several, which yet stand at the head of the list of our cultivated varieties. From that time to this day the cultivation of fruit of all descriptions has been generally extended throughout our most thickly settled districts, and many of us can remember the time, when, in our most crowded cities, a garden of greater or less extent was considered an indispensable appendage to every tenement of any value.

Horticulture, if a less conspicuous and honored art then, than now, was by no means a neglected one, and its rapid advance of late years must certainly be owing, in no small degree, to the broad foundation which had been effectually though quietly laid by our predecessors. The advantages which the community have derived from the unostentatious labors and instructive writings of such men as Samuel G. Perkins and Robert Manning, to forbear all mention of the living, if difficult exactly to define, are not therefore to be less gratefully appreciated. Nor can I forbear, in this connection, to notice the recent loss of Mr. Downing, one to whom we owe the most complete work on American Fruit Trees, if not the only one, to which that title can fairly be given; a gentleman whose extensive research and acute discrimination rendered him a valuable counsellor to our greatest adepts in gardening; while his clear and unostentatious common sense and unaffected enthusiam enabled him to render that pursuit easy and attractive to the most uninstructed. Few in any country have done more to promote the comfort and refinement of rural life; and happy and honored will be any man who may worthily fill the void left by his deplorable death.

I now proceed to the discharge of the duty specially assigned to me, by a few practical remarks on the cultivation of the apple, although it is obvious that much which may be said

on this, must be equally applicable to other fruit trees, and indeed to trees generally. In such a document as this, it appears unnecessary to give either a botanical description, or a historical account of this well known plant. It has been, as already intimated, common among us from the very beginning, and many specimens of apple trees daily strike our eyes, which cannot well be of much less age than a century. One species at least is indigenous, but is less remarkable for the size and flavor of its fruit, than the rich perfume of its blossoms. It has been but sparingly introduced into our gardens. Our orchards are mostly made up either of grafted fruit trees, or of natural plants from their seed. Near our large towns, the rearing of nurseries of apple trees has become a distinct business, and plants already grafted or budded, and of sufficient size to be finally planted out, can easily be procured at a moderate cost. But many may prefer to rear and graft their own trees, and this requires only a moderate degree of interesting labor, and the proprietor is more surely protected against any mistake as to the kind of fruit, than he can always be in taking his trees from an extensive nursery.

The rearing of nurseries is, I believe, well and generally understood. It may be questioned, however, whether the young trees would not be more vigorous if they were less crowded, and thus exposed more freely in their early growth to the action of the sun and air; in other words, if the nursery were made, so to speak, an orchard in miniature. Four feet between the trees, in one direction at least, might not be thought too great a distance. Many eminent English and French writers caution us against making the soil of the nursery too rich, on the ground that when the tree is finally removed, it may be to a poorer soil and may suffer from the contrast. But this is denied by other equally high authorities, and it would surely seem a better rule, to say that *we should treat the tree, as well as possible, at all stages of its growth.* A vigorous plant will be likely to bear ill management as well as to requite good, better than a feebler one. If the tree receives fair treatment in the orchard, and if it is not to be so treated it should not be set out there, it can suffer nothing from its previous good condition.

The best ground for an orchard is said by English writers

to be a hazel loam, of the depth of three feet. Doubtless this is true, but it is not every one whose land is of this quality, or who can render it so, without burdensome expense. The apple, in fact, is far from fastidious, and though in this, as in most other cases, the deeper the mould the better, yet the tree will grow well in almost any soil which is not very light and poor. The best ground seems to be an old grass field which has been previously broken up and cultivated for a year or two, as there are few better manures for any fruit trees than the sod itself, when well rotted.

Where the planter has the choice, a hill side seems better than a level, as affording a fairer exposure to all the trees, insuring a better drainage, and securing them against the unseasonable frosts, which are most apt to seize first on plants in the low grounds.* It seems to be fully agreed, that before the trees are set out, the whole field should be stirred to the depth at least of fifteen or sixteen inches. The most effectual way of doing this is, unquestionably, by trenching with the spade. But this cannot be done, even if no manure be dug in, at a less expense than fifty dollars per acre, a sum which, in most districts of New England, is much more than the whole value of the land. Still, this is only to be done once, and it is far from certain that the expenditure would be unprofitable.

The same object, however, may be secured to a great extent by subsoiling, which can be effected at a quarter part of the cost. The soil below is thus broken up, without being brought to the surface, and the whole bed of the orchard rendered light and easy to be penetrated, both sideways and downward, by the young roots of the trees. It is a question often asked, whether the ground of an orchard should be tilled, or merely a circle cleared from grass round the stem of the tree. The latter course, though little countenanced by writers, is often practised, probably from an unwillingness to sacrifice the hay crop, and a belief that the circle round the tree, if kept properly stirred, will afford sufficient room for the growth of the roots.

* While any slope seems preferable to a level, a southern one is, I think, less eligible than either an eastern or northern one. On a southern slope, the trees often prolong their yearly growth too far into the autumn, and the young wood, in consequence, is less perfectly ripened, and suffers from the subsequent cold.

This, however, is an unsafe supposition, for if the tree be thrifty, the roots will extend themselves to the limits of the cleared space long before the farmer is aware of the fact. They will then meet with a comparatively hard rim, and the tree will be, so to speak, in the situation of a potted plant. Besides, if merely a space of a few feet is left round the tree, then, to keep these spaces well weeded and thoroughly stirred, requires a degree of vigilance and industry which it is not easy to exercise, and which it is believed is in fact seldom exercised. If we regard the growth and fruitfulness of the tree as the great object, there is no doubt that orchards should be kept in tillage, as long and as thoroughly as it can be done, without injuring the roots of the trees. This cannot well be for more than ten or fifteen years, as, after such a period, those roots will have spread themselves so widely, as to monopolize the whole ground, although the occasional stirring of the surface by scuffling may even then be highly beneficial. The crops raised should unquestionably be of those kinds which admit of hoeing, as they exhaust the soil less than what are called white crops, and as the effects of the great disadvantage of our climate, *drought*, are obviated both by the shade afforded to the earth by the plants, and by the moisture, which, whatever the cause, unquestionably follows from the stirring of the soil. A further important preventive of the dreaded effects of our dry summers, may be found in mulching the ground, round the foot of the tree, with moss, leaves, or some other litter, and it would be easy to mention instances, in which hundreds of young trees have been saved by this cheap and simple process. It is scarcely necessary to say that when an orchard is tilled, it should be generously manured, so that no more of the richness of the soil may be taken from it, than is restored, and it is probably equally understood, that unmixed barnyard or other animal manure should not be allowed to come in actual contact with the bark of the tree. It is time to speak in particular of the operation of setting out the tree. Preliminary to this, as every one agrees, should be the digging of roomy holes to receive the plants. Three feet in diameter, and a foot or more in depth, are the least dimensions which I find recommended*

* It will be observed that I mention this depth as the least which I have seen recommended. From four to six inches deeper, I should certainly think preferable.

by any writer. The distance at which the trees should be set, is a point on which there is some difference of opinion, and a still greater variety in practice. Forty feet every way is not too much, and he who adopts this rule, will be surprised to find in how few years the extreme ends of the branches will meet. The square is generally preferred I believe to the quincunx, or any other kind of arrangement, as more convenient for agricultural operations.

The time of year at which trees should be set, is a question much debated by English and French horticultural writers. In Europe, the autumn seems to be generally preferred; and there is a proverb quoted in the best English works on gardening which runs, "Plant a tree at Michælmas (September 29) and command it to grow; plant it at Lady-Day (March 25) and entreat it." This rule is, however, often qualified by good English and French writers, who state that in heavy or moist ground, trees are best planted out at the latter period. The spring is certainly preferred in New England. Now when we consider that our short and capricious spring is the very busiest portion of the year, and that much of our autumn is a time of comparative leisure, it is fair to presume that our farmers did not depart from the habits of their English ancestors without good reasons. One of these reasons may have been the great length and rigor of our winters, which leave the tree little chance of establishing itself in the soil, before the ground is locked up by the frost. It must be admitted, however, that the practice of autumnal planting has scarcely had a fair trial, certainly not in our day.

To the success of planting, however, at any time, there are two most essential requisites. The first is, that the tree be properly taken up. By many persons, young fruit trees are actually torn from the ground, and leave a large part of their slender rootlets behind them. Now all naturalists agree that these small fibres are in fact the organs through which the tree draws the greater part of its nourishment from the soil, while the main roots are in this respect comparatively inactive; and yet trees are often sold with scarcely a root of less than a quarter of an inch in thickness. The second requisite is that the tree be carefully replanted. Many who plant a tree, says Marshall, seem to think it enough to hide its roots in the ground; and we may add that they are often so effectually

hidden, as to give no indication afterwards of their existence. It must be obvious that the less the time which elapses between taking up and replanting, the better; and that the roots ought to be kept reasonably moist during the interval. The tree should be replanted in a bed of rich earth finely pulverized. This should be moistened; but the practice of very copious watering at the time of planting is condemned by Cobbett, and many other authors, and is of very doubtful expediency. There is reason to fear that many trees have been injured by a treatment adapted only to aquatic plants. Some writers have suggested the expediency of placing a layer of stones under the tree, in order to prevent the roots from striking downwards, and compel them to spread themselves near the surface of the soil; but I apprehend that the direction of the roots may be safely left to nature, and that there is no necessity of obstructing her in her operations. I doubt not, however, that the stones may have operated beneficially in another way, that is, by preserving a greater degree of coolness and moisture in the ground, and thus fortifying the tree against the effects of dry weather; but it is very questionable whether they render any greater benefit on the whole, to the tree, than it would derive from an equal quantity of good loam.

As to the depth at which trees should be set out in the soil, there seems to be a general concurrence of opinion that it should vary little, if any, from that at which they have previously stood in the nursery; but as the earth round newly planted trees is apt to settle, it may be prudent in the first instance to plant them about an inch deeper.

Stakes are sometimes used for the support of young trees; but if the tree be properly planted, they cannot be necessary, and may interfere seriously with the roots. If the trees are well set, they can certainly hold their ground without any artificial support. The spreading out of the rootlets with great care is of much greater consequence; and the time which, to a careless observer, may seem to be wasted in doing this with great nicety, will be amply repaid in the end by the vigor and fruitfulness of the tree.

After the tree is fairly planted, it is supposed by many at least if we may judge from the appearance of some of our orchards, that all the planter's labors are over, and that he has

only to permit it to grow. Plant a tree, said the Scotch farmer to his lazy son, and it will grow while you are sleeping. We cannot, however, say with equal truth that, if the planter sleeps all the time, the tree will grow in like manner. Constant vigilance is necessary, especially with respect to young trees, to secure a regular and well ordered growth, and a proper degree of exposure to the light and air; and, more especially to guard the tree against the withering effects of drought, and the ravages of disease and insects. It has been calculated, and I believe correctly, that if the labor which is required in a single season upon young trees, especially where the orchard is not kept in tillage, were fairly averaged, it would not amount to less than one month's labor, of one man, on each hundred of trees. If the ground is tilled, much of this labor will be given to the trees incidentally. It will still, however, be necessary to dig or hoe the ground near the trees, where the plough cannot safely be driven, and the hoe would seem to be the better instrument, as less likely to injure the roots. Care must be taken also, to clear away suckers, and to prune off all irregular limbs. Less pruning seems necessary with us than in other countries. There it may be best to throw open the head of the tree to the light and air, but our fierce suns and strong winds will penetrate any common mass of foliage. Little more is requisite than to prevent the limbs from crossing and chafing each other. Our chief care, however, is required to protect young trees from drought, disease, or insects.

Allusion has been already made to the first of these topics. It is brought home to the farmer's mind in almost every summer. If we should select any one feature of our climate as its peculiar characteristic, we should specify our long and parching droughts. Artificial watering, every one knows, is out of the question, since one thousand barrels of water would be requisite to moisten an acre of land as thoroughly as is done by a shower of a single inch. Two great remedies against this unavoidable disadvantage, seem, as I have already said, to be, first, shading the ground at the foot of the trees by hay, leaves, or some other mulching; and secondly, and chiefly, stirring the surface of the soil. The effects of this last expedient, when well followed up, (as it very rarely is,) are truly

astonishing. Whether it brings the moisture up from below, or down from the atmosphere, or prevents its escape by dividing and breaking up the soil, and thus rendering it less fit to conduct the moisture off, are questions of chemistry. The fact that moisture is in some way produced, is equally certain and ascertained.

An intelligent farmer in this neighborhood once remarked, that in putting in his turnip seed, he always followed the rule of the 25th of July, wet or dry, and being asked what course he took if, as often happened, a severe drought prevailed at that time, he answered that he stirred the land till he raised a moisture. Our trees seldom suffer from the opposite cause, excess of dampness, unless standing in absolutely wet land, in which case thorough draining is the obvious and only remedy.

On diseases, it may be observed as a preliminary remark, that, with respct to many of them, feeble and infirm trees are most in danger of being attacked. A healthy and vigorous plant, like a healthy and vigorous man, escapes their assaults, and hence the best preservative of a tree is to keep it well nourished and in good order. This is particularly the case in regard to the mossy coat which often gathers on the trunks and boughs of young apple-trees; for we find such trees, when thrifty and well cared for, often exhibit a bark as smooth and shining as it could be rendered by the most careful washing.

Where the moss has once gathered, it can generally be removed by a solution of strong washing soap, and scraping the bark.* Should any limbs die, there can be no other course than to prune them off, taking care to protect the wound effectually from the weather.

If the trunk is decayed, the removal of the decayed portion, and the filling in the place with clay, may arrest the evil. It is not to be supposed, however, that any application can cause the cavity to be filled up by a new growth from within. This, Forsyth pretended to do with his famous composition, which I believe was little else than a mixture of clay and cow manure. He received several thousand pounds for his secret from

* The moss may be removed more speedily by a solution of potash, but this, if too strong, may injure or destroy the tree. A wash of one pound to two gallons of water could, I have no doubt, be safely used. But I found that there was a difference of opinion in the Board, as to the using of potash at all, and I have therefore forborne to insert any recommendation to that effect, in the body of the report.

the English parliament. The slightest knowledge of physiology should have taught them, that a tree increases its bulk entirely by new layers on the outside of the old wood. Hence when a cavity takes place in the trunk of the tree, it is never filled up. If, however, the tree be young and vigorous, it is often grown over, and the tree outside appears as sound as ever, and in fact may grow and bear fruit for many years afterwards.

It should, however, be borne in mind that a tree, like every other living being, has its regular period of life. Many forest trees are endowed with a longevity which has no parallel short of antediluvian history. There are oaks in this vicinity which were doubtless stately trees when the first white man set his foot on our shores. The regular duration of the apple-tree is much more limited, and, according to our most accurate investigations, does not, in ordinary cases, exceed the term assigned to our own race, say seventy or eighty years. When the trees of an orchard, which has been treated with proper care, decay from age, little can be done to renovate them. The better course is, to watch against this event in anticipation, and plant out new orchards in other spots, and thus secure a succession of thrifty bearers.

Of the various insects which infest the apple-tree, (for almost every tree has several enemies of this description,) the most conspicuous in this neighborhood are the borer, the canker-worm, and the caterpillar. The first of these is described by Dr. Harris, in his Report, p. 89. It attacks the tree at the surface of the ground, or a very little way below, and mines through the trunk, pursuing a slanting course upward. If the tree is of any considerable size, the insect employs several years in reaching the opposite side of the tree. The remedy most commonly suggested is to take him out with a gouge. This, however, is an ineffectual, or rather over-effectual remedy, since it not only destroys the insect, but goes far to ruin the tree. The enemy should be arrested, if possible, at the surface of the bark, or stopped short before reaching it. I was informed by the late S. G. Perkins, that these objects could be effected by examining the trees twice in the year, viz.: in the middle of the months of June and October, destroying the insect if found near the bark, and pouring in a small quantity

of unleached ashes around the foot of the tree. Some may be deterred from this operation, from the mistaken idea of the time which it might require. In this case, however, as in that of many other minute gardening operations, the requisite time is much less than is generally supposed. Mr. Perkins told me that he examined three hundred quince trees in search of the borer, (which is precisely the same insect as the apple borer,) in a single morning; and the late Mr. Prince states that, in tilled land, one man could take out the borers from one hundred apple-trees in the course of a day. It has been observed that this insect is much less common in clayey than loamy orchards, probably on account of the greater difficulty which he finds in working through the stiff clay.

The most dreaded enemy, however, of our apple orchards is the canker-worm. Wherever he attacks in great force, he strips the tree entirely of its leaves, and where his ravages are continued, as they often are, two or three years in succession, kills the tree itself. He likewise attacks our most magnificent forest tree, the American elm, and many noble specimens of this plant in our vicinity have fallen victims to this enemy within the last ten years. Happily, its ravages are periodical and not constant, and it appears to travel very slowly from one district to another. Like the borer, it seems somewhat averse to a clayey soil. No remedy against this destructive insect has yet been found which can be pronounced at once effectual and economical. The great object, as every one knows, is to prevent the insect, in the autumn or early spring, from ascending the tree, where it goes up to lay its eggs. The insect has a strong propensity to climb, and can walk easily over any surface, unless it be either viscid, (sticky,) or shifting, like loose sand. It will crawl, for instance, over a chestnut bur, as easily as over a chip.

To stop its progress, lead gutters round the trunk of the tree filled with oil have been recommended with great confidence. These, however, if made of the usual size of an inch in width, are quite ineffectual. The insects which first climb are caught in the oil, and serve as a bridge over which their followers can walk dryshod. Gutters, to be effectual, should be over two inches in width, and this would greatly increase the expense, and if applied to any large number of trees, the amount would

be a serious matter. Besides, in any case, the oil is almost certain to be driven out by wind or rain against the bark of the tree, and the tree in consequence is seriously injured. Tarring on the bark itself is still more objectionable. If the tar is applied on strips of canvas, which are fastened round the body of the tree, there is still danger that the tar may run down upon the bark. Besides, the tar is soon hardened by the sun or chilled by rain, and the insect then passes over it with ease.

The best expedient with which I am acquainted, is that employed in Europe, against an insect resembling our canker-worm, though apparently not so notorious. It is mentioned by Köllar, and called by him a wooden boot, I suppose for no other reason than because it is placed round the foot of the tree. It is, in fact, a box, without top or bottom, and with sides of about a foot high, furnished with a border at the top, on the outside, like the eaves of a house. The tar is put on under the border, and being thus protected from the sun and the weather, remains liquid for a long time. Care must still be taken to renew it occasionally. Some insects may rise between the boot and the tree, but these will be few, if any, as the propensity of these insects is to climb over the obstacles which they find in their path, and not to mine beneath them, and most of them rise from the ground at a little distance from the very trunk of the tree. For a tree not exceeding twelve inches in diameter, a boot will cost not exceeding sixteen or eighteen cents, and if taken off and replaced at the proper seasons these boots will last for years.

The history of the insect may be briefly given as follows. The male, which is a small miller, and the female, a grub without wings, climb the tree in the autumn, or early in the spring, and the female deposits her eggs on the branches of the tree. These eggs are hatched in the spring, about the time of the appearance of the young foliage. The young worm issues forth and preys on the leaves for about four weeks, turning this short period to (for himself) the very best account. He then descends into the ground, and about the first of July the insect has disappeared for the summer, to issue forth again in his perfect state, after the first hard frost, or from that period till early spring. Dr. Harris states, that in mild winters he has seen them issue forth in every month from October till March.

A mode of destroying the chrysalis while in the ground, by wholesale, has been suggested by Dr. Harris, and that is to turn pigs into the orchard, who can detect the insect by their remarkably keen scent, and will devour him greedily. The trees, if young, must be protected from the swine by some cheap barrier. This expedient seems likely to be quite an effective, and not expensive one, and well deserves a careful trial. The benefit in other ways to the soil, by the stirring and nourishment which it must thus receive, cannot be inconsiderable.

The caterpillar is an insect less voracious, perhaps, than the canker-worm, and at any rate far more within our control. So completely, indeed, is this the case, that a caterpillar's web in an apple-tree is a sure signal of negligence in the proprietor. Various ways of destroying these insects are in use. The first is to destroy the eggs in the autumn and winter. The eggs of this insect are laid round the small branches in masses of about the size of a date stone, and covered with a shining varnish, which protects them from the cold, but at the same time renders them more conspicuous. No one who has once seen these curious collections can ever mistake them. In the spring the heat of the sun at once melts the varnish, and hatches the egg, and the caterpillars begin to spin their webs, and to go forth and prey on the leaves. They always, however, keep up a connection with their nests, and return to them at night, and do not sally forth again till the dew is dried in the morning. There are various ways of checking their ravages. The little collections of eggs may be picked off in autumn and winter. On young trees this method is often very effectual, as many of these little packages may be detected by their glittering surface. Two dozen of them have been collected in the course of an hour, and this is by far the neatest and most agreeable mode of getting rid of the evil. But as many eggs may escape notice, and many more be out of reach, it will be necessary to examine the tree after the insects have formed their nests in the spring. As the insects are always at home early in the morning, the nests may be pulled off and crushed by the hand. This is a disagreeable operation even to the sturdiest farmer, but where the nests can be reached it is thoroughly effectual. Where the nests are out of the reach of the farmer's hand,

they may be destroyed by a circular brush, of about an inch in diameter, with a long handle, and this, if applied every few days, will fully answer the purpose.

When the fruit of the tree is ripened, no other attention is necessary than to gather it with due care. The apple bears its fruit on spurs, which continue to bear several years in succession, and if these spurs are injured by careless or hasty gathering, the fruit of following years is lost.

It will be perceived that I have left untouched many important points in relation to the culture of apple-trees. I have said nothing, for instance, in regard to those varieties of apple, which are best raised in our orchards. There are so many of these varieties that the bare enumeration of them, without one word of comment, would occupy several pages. I shall merely remark that the three kinds most generally raised in this vicinity, are the Rhode Island Greening, the Baldwin, and the Roxbury Russet, all natives of New England, and of well established reputation. The finest of all apples, in general estimation, the Newark Pippin, cannot be cultivated to any advantage in our climate, and requires a more southern atmosphere, growing to great size and beauty in Virginia. I pass over, also, entirely, the subject of grafting, and have said scarcely anything on that of manuring. But, notwithstanding these omissions, and many others doubtless of equal importance, I have extended this report much beyond my expectations. It was no part of my design to write a complete treatise, but merely to offer a few hints on those topics, which have suggested themselves most prominently to my own mind. Respecting many of these there may be differences of opinion. One fact, however, should be borne in mind, that of two proposed ways of proceeding in agriculture, both may be good, though not equally so. Happily for us, agricultural operations are not like the delicate operations of surgery, which there is only one safe way of performing, and in which the slightest deviation may produce disastrous or fatal consequences. When we say, for instance, that the spring, on the whole, is the best period for setting out trees in our climate, or that young orchards should be kept in tillage, we are far from asserting that no orchards which may be otherwise managed can grow or thrive. But though there may be

more than one safe way of proceeding, there is probably only one best way, and what that is may well be a subject of frequent and earnest, though, it is to be hoped, in all cases, of fair and good-humored controversy. When we consider the adaptation of the apple-tree to the climate of all the States lying north of the Carolinas, the variety of soils and situations in which it will flourish, and the many ways in which its fruit may be used as an agreeable and nourishing article of food, we may pronounce this tree to be of more importance to our country than all other fruit trees united; and the beauty of a thrifty orchard in full bearing, striking as it is to the most careless observer, must be deemed by far the least of its recommendations.

January 12, 1853.

NEAT CATTLE.

BY SETH SPRAGUE.

The small reward the farmers of Massachusetts obtain for their labor, and the lack of due return for the capital invested in the business of farming, is a source of much discontent among those employed in agriculture, and calls for all possible improvement in every department.

Hitherto our attention has mainly been directed to improved modes of culture, with little attention to the cattle best suited to our condition. A few enterprising individuals have, for a number of years, been importing pure blood cattle. The Massachusetts Agricultural Society, for many years, has employed its funds to improve the cattle of our State, and with a liberal hand has distributed gratuitously her importations of the best bloods of Great Britain. Our farmers have not been successful with them, and have been unwilling to give them a fair trial. Little progress has been made in their general introduction. It is a common remark among farmers esteemed for their experience and intelligence, that "there are as good cattle among our natives as can be found anywhere." Without disputing the fact that we have some good native cattle, and some superior cows, it must be acknowledged that we have a great many poor cattle. Among the few well-built, fine-limbed, thrifty, good-feeding cattle, we have thousands narrow-chested, ill-formed, or deficient in some essential point, and such as nature forbids giving us good returns for the food consumed. It would be strange if it were otherwise. The course pursued since the first settlement of the country, has been directly calculated to deteriorate and run down the best cattle the world ever produced. The breeding of cattle has been reduced to a science in Great Britain. They produce cattle that do not vary in color and form, with as much certainty as any effect follows cause.

We have no distinct breed of cattle—none on whom we can rely to produce offspring like sire or dam. The famous cows that have happened among us have failed to leave any progeny like themselves, or that sustained their reputation.

Our native cattle have been bred promiscuously together for more than two hundred years, without the least attention to sire or dam. We have a motley race, of every form, color, and size.

Without attention to the laws of breeding, we can never have cattle that give proper return for our care and food. The prevailing practice of selling our calves to the butchers at four weeks old, and replenishing our stock from the droves from Maine, New Hampshire, and Vermont, must tend to perpetuate, to coming time, our degenerate race. There are few cattle raised in the eastern part of the State, and such is the indifference on the subject, that few, even of those who contemplate raising a calf, would be at the trouble of sending a cow a few miles to the best blood bull, if they could get a calf near by, from an ill-formed male, the meanest of his race.

Our cattle bear a much larger relation to the profits of the farmer than we are generally aware of. The capital invested for the feeding and accommodation of our cattle cannot be estimated at less than three-fourths of the whole cost of our farms. If we estimate the value of the labor bestowed in producing a winter stock of food for them, and the time we spend in feeding and caring for them in summer and winter, a less portion than three-fourths would not accomplish that part of a farmer's work. We therefore see at a glance that much may depend on the quality of our cattle in making up our year's accounts. The greatest object of the farmer is to have those cattle that best serve his interest in beef and milk.

The disposition to use horses, and the general practice of devoting the oxen of last year to the shambles, and buying from the droves in autumn, renders the working quality of oxen of less consequence.

The average life of our neat cattle does not exceed five years. A large part of those raised, especially steers, go to the butcher at two and three years old, and those that escape the knife seldom exceed seven. Our cows are turned off to fat, for various causes, at all ages. It seems evident that the great object of the farmer should be to obtain cattle that mature early, and lay on the most flesh for the food consumed. The difference in the value of cattle that are as mature at two

or three years old as others are at three or four, is so obvious as not to require a moment's consideration.

The agriculturists in various parts of Great Britain, for near a hundred years, have been endeavoring to improve their neat stock. The Devons, the Durhams, and the Ayrshires, all have their admirers, each having, in their own estimation, arrived at the greatest perfection. Early maturity has been a prime object with them; increase of weight without material increase of size—a long, round body—small head, heavy quarters, and small offal. The strict and unvaried practice so long persevered in, of breeding only from the best specimens of the same stock, and their more especial attention to the character of their males, has produced a purity of blood that produce offsprings of like form and general character. Even at the present day, after nearly a hundred years' careful attention to their rules, they still follow them with the same scrupulous attention.

It is often asked—"Why not breed from our native cattle, for those long bred on the soil are better than those brought from a distance." That a superior breed of cattle may be raised up from our native stock, we cannot doubt; but no one has yet been willing to try the experiment and wait twenty years for proof of the result. It is not so easy a matter to raise up a new and improved breed of cattle as many suppose. The first cross may and often does produce a better animal, but the progeny of such frequently fail. It requires a critical knowledge of the laws of breeding, sound judgment and much experience, to improve a mixed poor race of animals; whilst every farmer may be sure of good animals if bred from pure blood, and by attention to a few simple rules his stock will always be growing better.

Our situation is so unlike that of Great Britain, that in many things it is impracticable for us to pursue the same system they do. In that country land is dear and labor is cheap; the climate is cool and damp. With us land is cheap and labor is dear; our summers are hot and dry, and the cold extreme in winter. Their farms are large, with large herds of cattle. Ours are small, with few cattle. They do everything upon a large scale and with a view to the future. We work

on a small scale and look for immediate returns. They have more system and a superior knowledge of the science of agriculture and the laws of breeding.

But it may be doubted whether any English farmer, however skilful, would succeed on the best farm in New England. But principles are the same; the laws of nature, whether applied to the cultivation of the earth or the raising of animals, are the same everywhere.

It is for us to know how to apply them to our circumstances. It is true that in determining the kind of cattle suited to a farm, regard should be had to the soil, climate, and general mode of feeding. That it is most profitable to the farmer to have them rather under than over the produce of his land; that the cattle of the valleys and rich pastures are invariably larger and better than those bred and kept on the hills with short feed; THIS holds good in all countries. Cattle of the same blood will be smaller or larger, as they are bred on high, thin, or deep, rich soil. The natural consequence of poor feed and neglect of animals, is to deteriorate them. They lose their disposition to take flesh and become flat-sided and of feeble constitution.

We cannot expect that cattle brought from a cool, moist climate like that of England, where they get a full supply of green food seven or eight months, and a liberal supply of roots in winter, should carry the same heavy coat of flesh, or in any way sustain the same superiority in our hot, dry climate, where they are less liberally fed. Our cultivation is improving. We feed our cattle better than our fathers did, and as we progress (as progress we shall) we shall have the means of sustaining a larger and more profitable class of animals than at present.

We cannot, however, but think that either of the pure breeds of Great Britain would be an improvement upon our present degenerate race. If they consume more food, which many of them do not, they will give a better return for the food consumed. When animals are bred for the carcass merely, and become fat at an early age, they not only return sooner the price of their food, but in general a greater value for the food, than slow feeding animals. The great desideratum is a race of cattle that combine the best qualities for flesh and milk.

The Ayrshires have the reputation of being the best milkers of any of the British cattle, and they have generally sustained that character in this country when fairly proved. The greatest objection to them is their short teats, which makes it difficult to draw their milk with ease and dispatch. They are good feeders and take flesh well. The Durhams have all the desired qualities for a profitable stock, except for milk. They have been bred more with a view to the shambles; some of them, however, have proved extra good milkers, but the trial of them in our vicinity has not been satisfactory.

It is thought by many that a disposition to fatten is incompatible with a disposition to secrete milk. The fact that good milkers are generally thin of flesh, and that some cows fail in their milk when highly fed on rich, dry, fattening food, is not conclusive. This never takes place when fed on grass, however luxuriant.

We should naturally conclude that animals that convert the greater part of their food into nourishment for the body, may also be so bred as to secrete proportionately a greater quantity of milk.

The North Devon cattle are perhaps the purest bloods known, being an improved stock upon the native race, which has never been crossed. They are esteemed for their fine proportions and beautiful deep red color. They excel for the yoke, but are not esteemed as milkers.

The Herefords mature early and fatten well. The oxen are large and good for work, but the cows are poor milkers.

A race is being introduced from the Island of Jersey, in the English Channel, by enterprising individuals, and also by the Massachusetts Agricultural Society, which may accomplish an object long sought for, but not yet found to general satisfaction —a blood stock of good milkers.

The Jersey cows are famous for giving rich milk, which yields more butter than that of any other cow. Seven quarts of milk, it is said, has made a pound of butter. Some individuals in this country have made fourteen pounds of butter a week, for many weeks in succession. A breed of cows that will give the quantity of milk ascribed to them, would seem to be of inestimable value. All who have attempted to give their character, agree in the quality of their milk. They do

not all ascribe to them a large quantity. Foreign writers represent them as of small size, bad form, narrow-chested, big-bellied, and of feeble constitution. Their appearance does not give them a better character in the eye of our most experienced breeders. We cannot recommend them for general purposes until their real merits have been better tested. They will, however, be sought for by amateur and gentlemen farmers, who are able to sacrifice economy for rich milk, thick cream, and high flavored, golden hued butter.

The feeding and rearing of cattle is a subject requiring studious attention. We know little of the relative value of the various kinds of food adapted to the animal economy. We rely mainly on grass, and fatten few in the stall. We have in our country few well-tried experiments on record. We form vague conjectures, and consequently make many mistakes.

In our winter feeding we are apt to let our cattle lose flesh, and rely on summer pasturage to restore them. By so doing we suffer a greater loss than many are aware of. Animals in good flesh in spring are better for any purpose. Young cattle, that have been kept in a growing condition through the winter, will not need a whole month's feed on grass to give them a start, but they will grow on more vigorously. Our oxen will do more work, and are more cheaply fitted for the shambles. Our cows will bear their testimony by the manner in which they fill the pail. All will tell the story in autumn, especially such as go to the scales of the butcher.

It will be of little use for us to discuss the subject of raising our own cattle. Whenever we are convinced that we can make more money by good animals than by poor ones, we shall take measures to possess them. The progress may be slow, but it is sure. Whatever may be the conviction of the public mind, the fact will remain, that well-bred animals are the best and most profitable in all places, on rich land and poor land.

The subject is copious, and I can treat it only in the most summary manner. It requires an abler hand fully to illustrate and do it justice.

SETH SPRAGUE.

Duxbury, December, 1852.

CULTURE OF VEGETABLES AS FARM PRODUCTS.

BY JOHN W. PROCTOR.

Grass, grain and vegetables, are the principal products of the farms of Massachusetts. Subdivided as they are, into parcels, generally not exceeding one hundred acres of cultivable lands, our attention will be directed to the inquiry, how can these lands be cultivated to best advantage? How shall the farmer *keep* his lands, that they may *keep* him? Or what mode of culture will insure the best income, leaving the grounds in a condition not impaired by the crop?

My purpose is, to bring together such facts in relation to the culture of vegetables, as have come within my own observation;—chiefly in the county of Essex; and not to attempt a complete discussion of the subject.

Carrots, beets and turnips, are grown mainly for the feed of stock;—cabbages, onions and potatoes for the supply of the market. Carrots have been cultivated of late, with much favor and success. The short or horned carrot, and the deep rooted yellow carrot, are the varieties mostly raised;—depending somewhat on the depth and condition of the soil. Where the soil has been stirred to the depth of eighteen inches or more, it is not uncommon for these plants to descend to this depth. The average yield of carrots, on land well prepared and liberally manured, may be estimated at 15 tons, or 600 bushels, to the acre. We have known 20, 24, 32 and even 36 tons to the acre. More than this we have not seen. Though, the present season, we have seen a statement of an estimated crop of 1,800 bushels to the acre, in Berkshire. On inquiry as to the mode of measurement adopted, it was not deemed satisfactory. It savored too much of Yankee guesses.

As food for horses, milch cows, &c., carrots are valued at about half the price of English hay;—worth most, when used in connection with other feed. We are not unmindful that various opinions are entertained of the value of carrots; our purpose is to express such opinion as we have been able to form, after much inquiry, of those most experienced in their use,

and best competent to judge. Prof. Mapes says, "The carrot is the most valuable of vegetables for the feeding of horses and milch cows." Mr. Quincy, in a paper on root culture, Agr. Rep. vol. IV. p. 212, says: "Among vegetables, the carrot combines more advantages than any other, considering the quantity and quality of its produce, and the effect of its cultivation, in deepening, cleaning and ameliorating the ground, and in making the best preparation for subsequent crops."

Carrots require a strong soil, deep and thorough cultivation, and liberal manuring. An abundant crop may not be expected, without much labor in the preparation of the land. The soil must be deeply stirred, finely pulverized, and the manure must be thoroughly intermingled with the soil, and not left here and there in bunches. The subsoiling process should never be required of the plants. Deep stirring of the soil is found a remedy against too much as well as too little moisture. The principles involved in the subsoiling process need only to be better understood to insure its being more practised, especially where vegetables are to be grown. The late Mr. Phinney, of Lexington, than whom we have had few more intelligent observers of culture, said, "no man should presume to farm, without subsoiling."

When the ground is properly prepared, the seed of the carrot is usually distributed, the last of May or early in June, in rows from 14 to 18 inches apart. When fairly started—for at first the plants are extremely tender—it is well to thin them, so as to leave four or five inches space between. This will give an opportunity to expand, and fill the rows, at the close of their growth. Nothing is lost by this thinning process; large carrots are better than small ones. After carrots have been twice wed, their leaves spread, so that weeds have little opportunity to vegetate. The carrot is exposed to less casualties than most other vegetables. It is not often destroyed by insects. When it gets fairly under way, its growth is as certain as any other crop.

Different opinions are entertained as to the expediency of continuing to grow carrots, year after year, on the same ground. An early impression, taken from my father, himself an observing cultivator, was, that they would not do well more than two years successively. I have known them do well for three years, and have been informed by Col. Lincoln, of Wor-

cester, an intelligent observer, that he has known carrots grow well seven years successively. Most other crops do well after carrots, especially onions. It is a general practise, by best cultivators, to prepare the land for onions, by one or two crops of carrots. I say prepare for *onions*, because there is no crop that yields so good a return, for the labor applied, as the onion—the net proceeds to the acre often being more than *one hundred dollars*.

Upon the carrot there sometimes appears a blight or rust, turning the tops yellow before the roots are fully grown. The cause thereof I do not understand.

The venerable Timothy Pickering, first president of the Essex Society, says, in speaking of the culture of the carrot: "Even these plants, so long after they vegetate extremely small, were formerly sown broadcast. But this awkward practise has generally given way to the row culture." "I think," says he, "a preferable mode would be, to sow the seeds in double rows, about *ten inches* apart, with intervals of about three feet between the double rows." (See his Address to the Essex Society, 1820, for much valuable instruction on Root Culture.) It will be well to look back and see what Pickering, Lowell and Quincy said, forty years ago, and endeavor to improve upon their instructions. They brought clear heads, fair minds and strong arms to the work.

Mr. Coleman, in his Second Report of the Agriculture of Massachusetts, speaks highly of the culture of the carrot. Upon authorities cited, he estimates that an acre of carrots will furnish food for working horses, equal to sixteen acres of oats. If this be so, where land has any value in it, it would seem to be labor misapplied and land wasted, to raise oats for horses in preference to carrots. Certainly, as many tons of carrots should be raised as of oats; and most persons would think, twice as many. I know that Mr. C. sometimes permitted his credulity to run away with his judgment, but not so as essentially to impair his authority.

In Bristol, R. I., I am informed, that carrots are grown on the same ground with the onion, in alternate rows, the carrots being sown after the first weeding of the onions; and that fair crops of both are thus raised. This may do where the land is quite clear of weeds; but I think will not do on ordinary land.

I have known fair fields of onions to be nearly destroyed by starting the weeds between the rows, after they had been suffered to remain, in the busy season of haying, *one week* too long. Any disturbance of the delicate fibres of these plants has a most injurious effect upon their growth. So, I think, would be the crowding of carrots too near. It not unfrequently happens, that much is lost by grasping at too much.

In Loudon's Encyclopœdia of Agriculture the carrot is said to be a native of Britain, growing in its wild state, in chalky or sandy soils, and often in waste lands, and by the road sides. Thus grown, the root is small, dry, woody, and of a light, pale color; but when cultivated on good soil, it becomes large, succulent, of a rich yellow or straw color; so unlike the original, as scarcely to be recognized as of the same family.

TURNIPS.

The turnip, with many, is the "crop of crops," "the one thing needful on the farm." Such, if I do not mistake, was the doctrine taught by the eminent farmer of Marshfield, on his return from the view of culture in England; and he illustrated his faith by his works, as every one who ever viewed his broad acres, in the autumn, will be able to bear testimony.

In the English books the turnip culture is spoken of as "the sheet anchor" of light soil cultivation, and the basis of the alternate system of English husbandry, to which every class of the community is so much indebted." Mr. N. Biddle (in an address to the Philadelphia Society, 1842) says: "Although our frosts interfere with the English plan of feeding turnips from the ground during winter, still there can be no question that great advantages may be derived, by our farmers, from the cultivation of the turnip, to be laid up as green and succulent food for stock, to be used conjointly with hay and other kinds of provender." Had Mr. Webster's opinion of the value of the turnip crop been drawn from facts observed in his own fields, or in his own stable, I should value it more highly than when founded on English husbandry. A slight variance in the component elements of the soil, or subsoil, or in the atmosphere that hovers over them, may essentially vary the result. Turnips can be grown at much less expense than either of the other crops—only about *one-third*—if the estimate of Mr.

Brewer, the member of this Board from Hampden, is well founded. It therefore becomes material to ascertain their comparative value as feed for stock. That they can be advantageously used, in connection with hay and other feed, there is no doubt. The Swedish turnip, *ruta-baga*, as it is called, is the variety that finds most favor. The common round turnip is often grown, yielding six or seven hundred bushels to the acre, planted as late as July, after a crop of grass has been taken from the land. No easier provision can be made to meet the wants arising from a short crop of hay. Unless, as in the present season, the mildness of the first half of winter shall atone for the deficiency of the crop of the preceding summer.

BEETS.

The beet, in its several varieties, is much praised, and often recommended as worthy of cultivation. I have known in Newbury fine crops of 1,500 bushels, or thirty tons to the acre. Notwithstanding the abundance of the crop and the admitted nutritive and palatable qualities of the plant, I have rarely known its cultivation continued for many years. Those who have grown beets a few years narrow the limits of their cultivation. Accurate experiments, continued for a series of weeks, have demonstrated that cattle fed on beets gain twice as much as when fed on the same quantity of turnips, and more than when fed on carrots. Hence, the inference would be in favor of the beet. But there may be some other consideration to counterbalance this inference. The beet is a great exhauster of the soil, and does not grow well several years sucessively on the same soil. It is a poor preparative for any other crop. I have often heard, as a reason assigned for an indifferent crop, that beets were grown on the land the year preceding. No grower of onions, for instance, would presume to plant after beets, until some regenerating process had been applied, such as a green crop of oats turned in, in the autumn, or a crop of corn or potatoes, with a liberal dressing of manure. Perhaps this exhausting of the nutritive elements of the soil explains in part why beets are so rarely cultivated to any considerable extent as food for stock.

Some have thought that a valuable supply of green food for

milch cows can be obtained from the superabundant leaves of the beet, at a season of the year when the often prevailing droughts render such a supply most desirable. Such I remember to have been the opinion of Mr. Pickering, whose judgment it is hardly safe to question, when based on his own observations. That such a supply can be gathered, when the growth of the plants is luxuriant, there can be no question; but that the leaves can be plucked, without detriment to the vegetable, is by no means certain. Nature seldom makes a mistake in her design, or arrays a plant with more leaves than are necessary to perfect its growth. Instance, in the opinion of many, the cutting off the stalks of Indian corn, materially impairs the substance of the crop. Better let it all remain, say they, until the harvest.

In regard to the growing of all vegetables, those cultivators succeed best, who give most attention to the pulverization of the soil, and the subdivision of the manures, and the careful intermingling of the manure with the soil. I have often witnessed the cultivation, by the gardeners of Marblehead, of Beverly, and of Danvers, who grow crops equal to any others, and think their superior crops are mainly to be attributed to the operations above specified. "Seeds of all kinds should be sown as soon as possible after the ground is prepared to receive them, and before the moisture of the fresh-stirred earth is dissipated by the sun and winds; otherwise, many will never vegetate, or not until after a fall of rain; and the consequence will be, loss of time and an uneven crop." (See Address of Mr. Pickering, before referred to.)

CABBAGES.

There is no vegetable from which so bountiful a return may be expected as the cabbage. I have so often told the story of 18,000 head raised by Mr. Mason, of Beverly, on two and a half acres, and seen such an expression of incredulity awakened thereby, that I hesitated about mentioning it again, until I heard Prof. Mapes state that he had raised on his own farm the last season, 73,000 head of cabbages on six acres, being more than 12,000 to the acre. The only difference between Mason's and Mapes' cabbages, as the story was told, was, one sold them for $6\frac{1}{4}$ cents, and the other for $3\frac{1}{2}$ cents, a head. I

admit that I was astonished by the number raised by the Professor. I remember to have heard the late E. H. Derby say there was no crop that could be so advantageously grown for the feeding of stock, as cabbage. This he said after many years' experience on his extensive farm in Salem. The best approved method, as far as I know, of raising cabbages, is that practised by Mr. Mason. He turns over the sward, to the depth of eight or nine inches; applies a liberal coating of well fined compost, made in his barnyard, from material collected on the beach, intermingled with the other materials there gathered; harrows the land until the manure is completely imbedded in the soil; furrows at such a distance as will admit a cultivator to pass between the rows; plants the seed in hills about one foot apart; when the plants are fairly started, thins them out, leaving only the most vigorous one in the hill; and subsequently keeps the ground well stirred and free of weeds; always resisting the first beginnings of the worms. In this way he secures a crop with heads as uniform as so many peas. Such culture I have repeatedly witnessed, and know there is no fiction about it. The fertilizing properties disengaged by the decomposition of the verdure, overlaid by the inverted furrows, keeps the plants in healthy condition through the droughts of August and September, and the rich coating of manure applied gives vigor and health to the whole plant. I have never seen a handsomer growth of vegetables than Mason's fields of cabbage.

ONIONS.

No story of Essex vegetable culture will be complete that does not embrace the onion. This was so fully treated in an essay on this subject in 1845, (see *Essex Transactions*,) then extensively circulated, that I can do little more than reaffirm what was then said. Scarcely anything new in relation to this culture has come to my knowledge, excepting new and multiplied devastations of insects. Every year brings these to view, and through their agency the fond hopes of the laborer are often disappointed. Still, as a whole, there is no crop that pays so well as the onion; often yielding a clear profit of more than one hundred dollars to the acre, after deducting all incidentals. The present year our grounds have yielded four,

five, six, seven, and even eight hundred bushels to the acre. The best crop that came to my knowledge, grew on the farm of Dr. Andrew Nichols, in Middleton, on a light soil, with moderate manuring, yielding 355 bushels upon 70 rods.

I ought not to omit, that Mr. Ephraim Brown, of Marblehead, stated to me that he raised, the present season, six hundred bushels on half an acre. I know Mr. B.'s land to be first rate, and that he spreads his manure with a liberal hand. Such a crop pays well for doing this, at 40 cents the bushel, the price for which they were sold in Boston market.

POTATOES.

When I commenced this essay, my purpose was to speak of the culture of the potato, and the casualties to which it is exposed, it being the vegetable on which the human family are more dependant for sustenance than all others; the sudden annihilation of which would unavoidably create distress irremediable. But the mystery that overhangs the subject; the numerous abortive explanations that have been attempted, and the impossibility of condensing anything of value within the compass of an essay, have deterred me from the undertaking. Judging from the experience of the last year, there is a probability that the potato may get well of itself, without the aid of the doctor; and that the Commonwealth will be relieved of anxiety, and of the payment of the bounty offered.*

* I have recently met "Remarks on the Potato Plant," presented to the Kilkenny Literary Scientific Institution, Ireland, which contains better sense on the subject than I have before seen. The writer discards entirely the insect and the atmospheric causes of decay or disease, and finds a reason therefor in the natural history of the plant; in the fact, that it has its limited period of vivification, fructification, and decay;—which he estimates about thirty-four years—divided into periods of five, nineteen, and ten, from the seed of the potato ball. He relies entirely upon the cultivation from the seed, and not from the tuber, to maintain the recuperative energies of the plant. I have before heard the same idea advanced by Gen. Caleb Cushing, whose penetrating mind looks into subjects as far as any other man, and am inclined to believe the keystone of the mystery will be found on this track. Nothing short of a series of observations for twenty years or more, can fully test this theory; but any man who will do this, in this period, will raise a monument of fame more durable than brass, and have the consolation that he will ever be remembered as the benefactor of the human race.

SUBSOIL PLOUGHING AND THOROUGH DRAINING.

BY B. V. FRENCH.

A complete adaptation of the soil to terra-culture is the first consideration which should occupy the cultivator. The depths to which many of the roots of cereal grains, grasses, tapped rooted vegetables, vines, shrubs, and trees descend, is much greater than is generally imagined; no fixed point has been agreed upon with regard to their descent.

To form some estimation of the great depth to which roots of vegetables descend, the required plants should be planted on a line, in a soil prepared for the purpose, and when fully grown a trench should be opened on the side of the line of vegetables, to the depth of four or five feet, and by applying a stream of water from a garden engine on the side of the trench, the roots may be laid bare, and with a microscope, the small roots (which would not be visible to the naked eye) can be readily seen.

The writer, to secure a glacis, composed of fine black loam and sand, planted the Lucerne clover. This was done in June. In October, a root was pulled up which measured thirty inches in length, and much of it, no doubt, was left in the ground, the soil being adapted to the growth of its deep tap roots. For twenty years that clover has flourished, and has been mowed for soiling cattle three and four times a year. This clover was planted in 1824, and some of it is still alive. In a garden composed of an alluvial soil, parsnips were taken up four feet in length. In alluvial or drift soils, on the sea-coast, composed principally of sharp sand, but well fertilized, the finest vegetables have been grown; and pears, on quince bottoms, have produced some of our largest and finest specimens of fruit. In a garden, trenched to the depth of five feet, the Dearborn pear has been grown so large as not to be recognized but by its peculiar mark.

But deep ploughing, or trenching, is not all that is required. It has been found that the deeper the ground is trenched, the more surface or spring water it will hold; this was partly

remedied by Elkington and Anderson's practice, of finding the spring and tapping it by a drain; but there was still a thoroughness wanted. The gardener, before he strikes a cutting, lays a drain in the bottom of the pot, and when he constructs a grape border, he may be found laying his drains, on which are placed faggots and turf, and on these a prepared soil for the fine, tender roots of the grape. But the farmer may inquire, Will this pay? Let him try a small space, and judge for himself. He may inquire, How can this work best be accomplished? We must answer to this inquiry, that we know of no better way than the one so generally practised in England and Scotland, and now coming fast into practice in this country, known as Deonotonizing. This is done, first, by laying drains with tile, which can be procured from Mr. A. S. Babcock, Albany; an article cheaper than stone, even if near at hand. These drains should be laid from two and a half to four feet deep, and about twenty feet distance one from another, following his directions in the laying; after this work is done, plough crosswise of these drains, leaving an open furrow ten or twelve inches deep. In the open furrow let your subsoil plough follow to the depth of at least twenty inches from the surface of the ground. When the sod has decayed, cross-plough the subsoiling, so as to bring up about two inches of the subsoil, and at every cross-ploughing continue to deepen the soil until the subsoil has been brought to the light and air from its greatest depth. This soil, which was once but eight inches, is now twenty inches deep, freely and fully disintegrated, and fit for vegetables, grasses, or orcharding.

But where high garden tillage is required, a trench four feet wide and three to five feet deep should be opened; if a springy and cold soil, inclined to clay, one inch of sand may be put on the bottom, and draining tile, three inches in diameter, placed so as to conduct the water off from the soil; if a stiff one, it should be mixed with sand, as the trench is filled, by digging another. When the work is done, the earth thrown out of the first trench should be put in the last open trench, and if the work has been well done the garden will be well drained, and the soil so divided and mixed, that anything to be desired in open culture, with a suitable dressing of fertilizing matter laid near the surface, will be sure to flourish.

However well the soil may be tilled with the old practice, it can be much better done, and with certainty of a better indemnity for all reasonable outlays, by thorough draining and disintegration of the soil, either by the plough or spade, and the deeper the trenching, to the depth of five feet, and the more thorough the draining, the more gratifying and compensating will be the result to the tiller.

COWS FOR DAIRY PURPOSES — HOW TO BE SELECTED, AND THE MOST ADVANTAGEOUS USE TO BE MADE OF THEIR MILK.

BY WILLIAM PARKHURST.

Every department of agriculture is yet in its infancy, dairying among others. Manufactures, the arts, and commerce, have each received the fostering care of the government, and are arrayed in gorgeous apparel, while agriculture, the first-born of the family, has not only been deprived of the rights of primogeniture, but is actually clothed in tatters; we rejoice that the government, as well as the people, are waking up to a sense of their duty, and extending to this poor, forlorn child, the paternal hand, and clothing it in a better costume.

Notwithstanding dairying has been carried on to a great extent for centuries, still, it must be acknowledged by all, that it is in a very imperfect state. In order to advance this great enterprise, and bring it nearer to perfection, let each dairyman record and publish to the world his experience and observation.

The above question may be divided into two parts; 1st, How to select dairy cows? 2d, How to dispose of their milk? The most important step is the selection of the cows; here farmers differ, each having his favorite breed, and supporting his opinions with at least a becoming zeal. Some are warm advocates for the Alderney breed, others the Ayrshire, the Durham, the Herefordshire, the Devon, the Sussex, &c., each being considered best for the dairy; a mixture of the different bloods is supposed to improve their dairy properties. Still, I find many of our finest cows are of the pure native breed; but a cross with some foreign blood, generally, not only improves for the dairy, but for raising stock. How shall the farmer, who is entering this important branch of husbandry, choose his cows? by what traits? by what marks shall he select those cows that bid the fairest to make the finest milkers? This can never be done for a certainty. There are certain marks that, generally, hold good; not that each cow will have all the striking traits, but a good cow will have some of the most

prominent ones. I know of no better way to discharge my duty on this point, than by transcribing the opinions of those who have devoted much time to this business.

Mr. Aiton, a Scotchman, whose remarks on cows were published in 1812, and are regarded by English writers as reliable authority, gives below the description of an Ayrshire cow:—

"The shapes most approved are as follows:—Head small, but rather long and narrow at the muzzle; the eyes small, but quick and lively; the horns small, clean, bended, and their roots at considerable distance from each other; neck long and slender, tapering towards the head, with little loose skin hanging below; shoulders thin, fore quarters light and thin, hind quarters large and capacious; back straight, broad behind, joints of the chine rather loose and open; carcase deep, and the pelvis capacious, and wide over the hips; with fleshy buttocks; tail long and small; legs small and short, with firm joints; udder capacious, broad and square, stretching forward, and neither fleshy, low hung, nor loose; the milk veins large and prominent; teats short, and pointing outwards, and a considerable distance from each other; skin thin and loose; hair soft and woolly; the head, bones and horns, and all parts of least value, small, and general figure compact and well proportioned."

John Brooks, of Princeton, who has given great attention to the raising of stock, and, particularly to those striking traits that constitute a good cow for the dairy, says, in the American Veterinarian:—

"Head and face rather long; muzzle small; eyes prominent, bright and mild; forehead, between the horns, narrow; wide between the eyes; horns rather long, small, oval shaped, and wax colored, smaller near the head than three or four inches from it; neck slim and flat, not approaching to round; on leaving the shoulders the neck should fall a little below the line of the back; straight on the back; wide in the loins; the outlines of the loin should be nearly parallel; thigh should be thin; hind legs straight and small, standing wide apart; in walking the cow should carry her hind legs straight forward, not sling them out, describing the segment of a circle; the fore leg above the knee should be rather large; below the knee, small, approaching to round; foot rather large than small, but round, and of a dark wax color; breast wide; brisk-

et projecting well forward; milk veins large; deep in the flank; large hind quarters, and small fore quarters; bag, when empty, small and skinny, not fleshy, running well forward into the belly; teats middling size, neither large nor small, but rather long and elastic; color of teats, reddish brown, never white; hair upon the bag, soft and silky, growing or pointing on the hind parts upwards; except she be a very good cow, she may have an oval spot of hair growing downward, a little above each hind teat; if not quite so good, one spot above the left hind teat; if a little poorer, one spot above the right hind teat; hair thick, short and glossy; color red, dun, or brindle, with a golden colored ring around the eyes and muzzle."

The treatise on milch cows, by Guérson, a Frenchman, is worthy the study of every dairyman,—that peculiar turning up of the hair upon the udder, and embracing the *vulva*, called the escutcheon. Its divisions and subdivisions, it appears to me, are too minute to be of much practical use; but so far as I have examined cows, and conversed with others of great experience, I find that this mark, when distinct, holds good. I have never seen a cow, having this peculiar trait large and distinct, that was not a good milker. There may be exceptions; cows without this peculiarity may be good milkers, having the other marks; but, as a general thing, they will be either deficient in the quantity or the quality of their milk, or the time they continue to give it between their calves. A cow that gives a large quantity of milk for a few weeks after calving, and then goes dry four or five months, is a very unprofitable cow, and ought to be removed from the dairy and fattened for the shambles, and her place filled by a better one. Much depends upon the time a cow goes dry between her calves. The best cows on record have given milk almost without interruption. Cows that are great milkers are usually thin of flesh, they had better go dry six or eight weeks; the calf will be better, and the cow will be in a better condition to pass through the parturient state. The cow holding out to give her milk depends upon circumstances,—upon the pasture, the kind of food, the age, and, above all, upon the management of the heifer with her first calf. If she is well fed, well cared for, well milked, she will go dry but a short time between her

calves; but if she is suffered to dry early with her first calf, she cannot, usually, be made to hold out afterwards.

In selecting cows for the dairy, let the farmer take them from his own heifer calves; he knows his choicest cows, and the sire of his calves. Select those that have the most prominent traits that have been mentioned for good cows, for no one will have them all, and put them to good keeping; that food that will cause the fleshy parts to expand, and the secerning system to fill the cellular tissue with a normal degree of fat, will cause the lactescent vessels to enlarge, and be prepared to perform their functions, when the heifers come into the dairy, which ought to take place when they are two or two and a half years old.

A cow is considered to be in her prime from four to six years old, and will continue good till she is ten or twelve—many holding out much longer, if they have been well managed. It is with the brute, as with man; some fail early, while others continue to perform the functions of life to a much greater age; both depending, in a great measure, upon the manner they are treated. There cannot be too much said upon the management of heifer calves that are designed for the dairy. "It is of the greatest importance," says Professor Johnson, "for dairy cows to be fed, from their earliest days, on food that has a tendency to produce the milky secretion, and to be kept on that description of food when they are not in milk." By continued poor keeping, you can change a gentle, kind, docile, fine, silky-haired cow, to a coarse, long-haired, rough-skinned creature, better fitted for the race ground than the dairy. Cows that come out from a long winter, spring-poor, as the saying is, without flesh and a little strength, with their milk veins almost converted into ligaments, will be of little profit to the owner that year. The dairyman that undertakes to keep twice as many cows as he has fodder, makes a grand mistake; half well fed will give more profit than double the number half fed. Animals, by domestication and kind treatment, can be changed almost entirely, in their physical forms, as well as in their dispositions. The little shrub can, by continued cultivation, be made the thrifty and beautiful tree. Mr. Aiton says, "the urus of Lithuania is nearly as large

as the elephant; while the cows in some of the Highland districts in Scotland are not much larger than the goat. The bison has a mane like the lion, a beard like a goat, and a hump like the camel. But all these," he says, "are laid aside when the animal is domesticated." Seek for those cows that will make the most butter and cheese during the year; not those that give the greatest quantity of milk, without any regard to quality. A cow that will give a pailful of milk and have it all serum, is worth nothing for the dairy; the milk will do to sell, if the man has a conscience to sell it. In order to ascertain the true worth of a dairy, each cow ought to be milked by herself, and the milk used by itself, so as to ascertain the quantity of butter and cheese she would make in a given time. By so doing the value of each cow for the dairy might be determined. Farmers, by this process, who keep large dairies, would discover that some of their cows would yield double the profit of others. This would enable them to remove the poor cow from the dairy, and fill her place with a better one. The keeping of the two, other things being equal, will be the same. This must make a serious loss to the owner. It is not yet settled what breed of cattle are decidedly the best for the dairy. This is yet to be determined by farther trials. I will mention a few among the many of the celebrated cows for the dairy. The English cow called the Cromp cow, is, perhaps, the most celebrated for butter on record. The butter made from her milk, for several successive years, amounted to from 450 to 675 lbs. annually. She was of the Sussex breed. The greatest quantity of milk she ever gave in one day was twenty quarts. The most butter made from her milk in one week was 18 lbs. Other cows have made more butter in a week, and given more milk in a day. The advantage she had over other great milkers was, she scarcely went dry at all between her calves. The celebrated Oaks cow of Massachusetts made, in four years, 1,284 lbs. of butter, averaging 321 lbs. annually. The greatest quantity of milk she gave in a day was 18 quarts; the greatest quantity of butter made from her milk in one week was 19¼ lbs. The noted cow of Mr. Le Roy, Genesee Co., N. Y., calved in May, and on the 27th of June he took from her, at three milkings, morning, noon, and night, 31½ quarts of good, rich milk; which was not more, he

says, than an average for the whole month. But few cows have exceeded this quantity. There is, however, a great defect in this report, as the number of pounds of butter or cheese that was made from her milk in a given time, is not mentioned. As no particular breed can be depended upon, choose those for the dairy that combine the best qualities; those whose general aspect bids the fairest to make the finest milkers. Always select a cow that has the most of a feminine appearance; never choose one that has the marks of the ox—a large head, short, thick neck, and large fore quarters. Occasionally, one of this description is very fine for milk; but this is the exception, not the rule.

There is no department of agriculture that the farmer derives, at the present time, so great a profit from, as dairying. Many towns in the westerly part of the county of Worcester are giving their attention to raising stock, by bringing into this part of the county, bulls of full blood, most of the Durham breed; and many of the dairy cows are a cross of the native with this or some other foreign blood. There are many very fine dairies in New Braintree, Barre, Hardwick, and considerable butter and cheese is made in Petersham, and other towns in this vicinity. No large dairies like Col. Meacham's and others in the State of New York; but few farmers keep more than 30 or 40 cows, most of them not so many. The amount of butter and cheese made in the above towns I have not the means of knowing, but it is large, and of a superior quality. New Braintree has, for many years, been known in the market for her superior cheese, but, like the Minisenk butter, immense quantities have been palmed upon the world, that had no other of its traits than the New Braintree mark. We can judge something of the value of dairying, in this region, from the circumstance that many farmers, who can keep but a few cattle, stock their farms almost wholly with dairy cows, not even keeping a pair of oxen, but doing their farm-work, principally, with a horse. This part of the county, like many other parts, possesses good land for dairy purposes, producing, many years, much white clover and other grasses celebrated for increasing the lactean secretion. We find no particular account in the census returns from the different States that will enable us to give the number of milch cows in the Union. In

most parts of our country, dairying can be made profitable. Much of the land in the South, particularly the larger plantations in Virginia, that have been worn out by constant cropping, can be reclaimed by good husbandry, and made eligible for dairying, where now they only supply the inhabitants with milk and butter. I believe there is but little cheese made at the South. There is no land better fitted for dairying than the great western prairies.

This country is destined to become a great agricultural country; in no one thing will it exceed the dairy enterprise. There is no kind of husbandry that will yield to the farmer so much profit, and to the country so much wealth, as dairying. Cotton growing, the great staple of the South, is and must be confined to that region, while the great dairying business may be extended almost over the entire Union. In 1845, and I have not at my command any later date, the milk product of the State of New York alone, amounted to the enormous sum of forty millions of dollars, at the low estimate of two cents per quart for the milk sold, ten cents per pound for butter, and five cents for cheese; nothing is said of the milk used for the calves. The writer of the above says, that Pennsylvania and Ohio must have made, at a low estimate, their dairies worth, in that year, sixty millions of dollars, making the entire amount of the milk of the three States one hundred millions, almost double the entire cotton crop of the country. This was in 1845; for the last seven years there must have been a large increase in the number of cows, consequently, a proportionate increase in their productiveness. Notwithstanding the greatest care in the selection of cows, the finest pasturage in summer, the best care in winter, with a neat, warm, well ventilated cow-house, without good milkers, and a dairymaid that is an adept at her business, much will be lost. Regularity in milking is of the utmost importance. Where there are large dairies, I believe this labor is performed at 5, P. M., and 5, A. M. The dairyman does not intend that anything shall divert him from this regular business. Even in the hay season, when the rising thunder storm portends destruction to his day's work, the cows must be milked, come what will. Much depends upon the milker; it ought to be the duty of every one that performs this labor to do it without

conversing with other persons. Cows should be milked quick and clean. When once gone through with, they should be again stripped, as the richest milk comes at the last of the milking.

We come to the second part of the question: "The most advantageous use to be made of the milk."

Milk is divided into three parts: the oily or butteraceous, the buttermilk, and whey.

This last is by far the poorest part of the milk. It will be perceived, at a glance, that the disposition of the milk depends upon circumstances. In the first place, upon the location of the dairy. If it is near a market, where the milk can be disposed of at a reasonable price, it would be better to sell it than to make it either into butter or cheese, unless there should be, from some contingency, a disproportioned value between the two last articles and the milk, which is not likely to be of permanent duration. Farmers differ as to the quantity of milk it takes to make a pound of butter. This depends upon the quality of the milk. It usually takes from 22 to 28 pounds of milk to make a pound of butter. We will say 25 pounds, or about three gallons. If the milk will bring two cents a quart, the farmer had better sell his milk than make it into butter, though butter may be worth twenty cents a pound. There is a great difference in the richness of milk. It is said that five quarts from the famous Oaks cow would make a pound of butter. The quality of the milk must depend upon the breed of the cow, and the manner of feeding. It matters but little what the breed is, if the cow is a starveling. A cow kept upon coarse fodder, miserably poor, will return to the owner milk as much deteriorated in quality as in quantity; dairies cannot be kept poor, and be profitable. In making milk into cheese, this will again depend upon the relative value of the articles. If seven quarts of milk, or nearly that, will make a pound of cheese, would it not be better to sell the milk for $1\frac{3}{4}$ cents a quart, than to make it into cheese, though the cheese would bring nine cents a pound.

The serous portions, or whey, after the caseous part is removed, is not very valuable, but worth something for store pigs, but not so valuable as buttermilk, when the cream is churned in the usual way. There is, I find, a great difference

among dairymen with regard to making butter or cheese, which is the most profitable. Mr. French, of New York, says, it costs him twice as much to make butter as cheese. I believe it is a practice in this part of the country to make butter in the spring, till the cows have mostly come in, then to make cheese as long as they hold out in the autumn; as their milk diminishes, make butter again, till they are dry. The milk in many of our largest dairies, is entirely made into cheese after they commence making, even buying their butter for family use. Some, not many, churn all their cream in the usual way, not making any cheese, and using the refuse milk and buttermilk for fattening pork. This is the course pursued by many of the Irish in this vicinity, as they are unacquainted with cheese making. I think it is not generally made in Ireland. They make their dairies profitable in this way. The most profitable disposition of the milk, next to selling it, is, unquestionably, churning it, instead of the cream, in the usual way, where there is a near and ready market for the butter. The finest, the best flavored, and by far the most palatable butter, it is said, is made in this way. Where the dairies are large, this labor is performed by horse or steam power; where they are smaller, by dog or sheep power.

The milk, after it has been deprived of its buttery principle by the churning process, may be made into cheese. I do not know that this is done, but it seems to me it might be, and make a cheese, to be sure, inferior to a four meal, but superior to a common skim cheese. If not disposed of in this manner, it is valuable for fattening pork, or raising calves. I have seen very fine calves raised by keeping them on skim milk, with a little Indian or oat meal made into porridge. It is said that a small quantity of molasses added to this gruel is a great improvement, as it is a substitute for the oily part of the milk.

I will quote a few remarks upon dairying, from the report of Harvy Dodge, of Sutton, to the agricultural department of the Patent Office, in 1850, upon farming in the county of Worcester. He says: "Milk is worth, in the south part of the county, at the farmer's, for the Boston and Providence markets, two cents a quart, eight months in the year; and three cents the four remaining months. For butter: eight quarts of milk for a pound of butter; average price of butter, twenty cents a

pound. When butter is manufactured, the waste milk, for swine or other purposes, covers all the cost of labor in its manufacture. It is believed, that to manufacture our milk into butter, instead of sending it to the market at the above prices, would prove more profitable to the farmers of the county; first, because the waste milk goes far towards growing and fattening swine, and in all cases where suitable help can be obtained at fair prices, or more particularly, where the farmer's wife or daughters can personally attend to its manufacture, it is believed that the waste milk very much more than pays for all labor. Besides, the economy of feeding swine with this milk, causes the farmer to feed double the number of swine that his neighbor does, who sends his milk to market. Hence the difference in the manure heap. Good cows should be the first object for the dairy."

Farmers will do well to read the report, as it is a valuable paper.

Let the dairy departments, and all their utensils, be kept in the most perfect neatness; let the atmosphere of those rooms be perfectly pure, not an odor arising to offend the most delicate olfactories; then shall the cheese room, replenished with its golden treasures, not only delight and charm the eye of the spectator, but fill the purse of the owner with the more solid charms.

Pertersham, 1853.

INDIAN CORN—THE VALUE OF THE CROP, AND THE BEST MODE OF CULTIVATING IT.

BY J. R. LAWTON.

No grain raised by the farmer, especially in the New England States, gives so large a return for labor bestowed, as corn.

This grain has properties for fattening cattle, swine, and sheep, as well as fowls, which no other grain possesses. It is fitted, when properly used, to supply the principal wants of the domestic animals.

There is no grain possessing so large a per centage of oil, which is readily converted into animal oil, or fat. This is only done by a slight change of composition. This fact is clearly illustrated by the distillers of the different kinds of grain. The oil of corn, or any grain, cannot be converted into whiskey; it rises during fermentation, and separates. Some distinguished men have found by experiment that from one hundred bushels of flint or northern corn, fourteen to sixteen gallons of oil were actually taken. No other grain has ever produced a like per centage of oil.

It is an admitted fact, by all who have had experience in the fattening of cattle and swine on still slop, that they fatten much faster while fed on the slop made of corn, than they do on that made from any other grain. And if for cattle and swine, I think it may apply to all animals intended for slaughter.

Corn possesses a superior quality over other grain, from the fact of its being, with natural ease, converted into bone, and the important ligaments which support the physical structure of the animal. While being properly fed on this grain, the oil changes easily into fat, or animal oil, and the flinty portions of the grain are forming bone and muscle, so that each of the two important wants of the animal is with the greatest exactness supplied; perfectly answering the purpose for which it was designed.

The value of this grain, by actual experiment in feeding, clearly shows the worth of the crop to the farmer. I have for many years fed from twelve to fifteen hundred bushels a year, and some years more, preferring it to any other grain at the market price. The flavor of the meat, when fed on corn, is better, and the flesh has more solidity, notwithstanding the large amount of oil it possesses.

Probably, there is no plant which possesses so much nutriment as the leaf of corn. I would not be understood as saying that the main stalk possesses much nutriment, other than, when suitably prepared for the animal by being cut or mashed, it serves as a retainer of the more nutritious food.

I have sometimes fed a lot of sheep on corn stalks, giving them nothing else for several weeks in the commencement of winter, and then changed them to good hay, but could never have them do as well, and sometimes have been under the necessity of giving grain for some time after the change.

Cultivators are apt to think their own way the best; and true it may be, to some extent, for different soils require different treatment; and the man who knows nothing of any soil except the one he tills, is unable to judge of other soils, or how they should be managed. Yet there is a law fixed by Him who made the soil, and that should be well understood by the husbandman to render him successful.

The use of manures in growing corn is quite important, and much depends upon the manner of application. For instance, should there be warm, coarse, active manures, put on dry sandy land, the plant would soon dry up, (unless the season should be very wet,) and the manure would spend itself without benefiting either land or plant. Whereas, if the same manures were applied to cold, retentive lands, both crop and soil would be benefited, in proportion to the quantity used and manner applied.

This grain has many peculiar qualities, and requires all those properties in the soil, which the grain possesses.

The time to plough for this crop depends much upon the kind of soil. If the land has a strong mixture of clay, with a heavy sod, I think it should be ploughed early in the fall—say the last of September or first of October—preceding the spring

of planting; thus giving the sod sufficient time to decompose, and the hard clayey portions of the soil to become pulverized by the action of the atmosphere and frost. This not only fits it for the necessary wants of the plant, but renders it much easier cultivated than it could possibly be by spring ploughing.

These lands should be ploughed deep, from seven to eight inches, (if not subsoiled,) with a good coat of manure turned under, for this, with the decomposed sod, furnishes a large supply of nutritious matter through the season of growth. At the same time there should be a dressing of pulverized manure, say fifteen or twenty loads to the acre, and ploughed in before planting, but not so deep as to disturb the old sod, for that should be left as a resource for the corn roots through the latter part of the season.

The land for all hoed plants should be well prepared by ploughing and harrowing, to insure a good crop.

The more loamy and sandy soils may be ploughed in the fall or spring, to advantage, if the furrow slice be laid flat, and well harrowed or cultivated before fermentation commences, by the decomposing of the sward and manures, if any have been spread in before ploughing; so that all the gases may be taken up by the soil, to be given off as the plant in its growth may require.

These lands should never be ploughed less than seven inches in depth. Deep ploughing almost invariably insures good earing. While light or shallow ploughing is quite as sure to give short ears and a light crop.

Some farmers prefer, after ploughing and harrowing, to mark out their land with a dray, three and a half or four feet apart each way, and plant on the furrow slice, which appears to me to be incorrect; for a good lot, well ploughed and prepared for the crop, may be so managed in depositing the seed, as to give a poor return for the labor bestowed. For instance, if the land is ploughed deep, and the manure turned in as it should be, leaving a cold inactive soil on the surface, and the seed then deposited four feet apart between the hills, the corn can never grow large, or yield more than twenty-five or thirty-five bushels per acre. Whereas, if the same lands were furrowed out with a plough, down to the sward, (without disturbing it,)

three feet apart one way, and the same distance, or two feet and eight inches, with a plough or dray, the other, and the seed put in the bottom of the furrow, the roots immediately strike the decomposed foliage and manure, which is their home. There they remain, and bring forth the blade, stalk, and ear, in rapid succession; thus giving the farmer, after having passed through it with the cultivator and horse four or five times each way, and hoeing twice, a product of from fifty to seventy-five bushels good sound corn to the acre.

The practice of most farmers (in the New England States more particularly) has been to put their manure in the hill. Consequently, they have had a larger growth of stalks, and less corn than they would have had if they had spread it and ploughed it in; the strength of the manure being taken up in the growth of the stalk, and at the season of earing and filling, its only resource is from the soil, for the stalk has not the power that it should have to put forth large long ears, nor to fill out well what is formed.

Ashes and plaster, in equal parts, very much increase the crop, especially on soils composed of sand and loam. Half a pint of this mixture should be put in the hill, and a slight brush of earth thrown upon it, otherwise the corn will not readily vegetate. This manure answers two very important purposes: 1st. It gives the plant an early start, from the fact that the roots, which start before the blade, immediately strike into the ashes and plaster. 2d. The ashes decompose the sod under the corn, and prepare it for the use of the plant.

The same mixture is equally beneficial on clayey loamy soils, as on those more light and porous.

Much labor has been expended in raising large mounds around the corn; consequently the soil is taken from between the hills, and many of the roots are broken and mutilated, and in a dry season the plant suffers.

Level culture, or as near so as possible, should be had in the tillage of this crop. The roots then remain unbroken, and in compliance with those laws that govern the growth of this plant, large supporting roots are sent out from the main stalk, which give it the same strength in the ground that it has when a large hill is made, and much labor is saved.

One item in the managing of this crop should not be lost sight of. That is, in thoroughly cultivating it, keeping down all the grass and weeds that start, which, if suffered to grow, choke the plant, and take from it the strength and richness of the soil, and also leave the land in a bad state for the following crop.

EDUCATION OF THE YOUNG FARMER.

BY SIMON BROWN.

It is a remarkable fact, and one that will be contemplated by posterity with regret, that while young men, destined for other callings and professions in this country, have received early in life, the rudiments of an education expressly adapted to assist them in the successful prosecution of their respective pursuits, *the young farmer* has been overlooked in the great scheme of popular education.

The wise liberality of our government, even from the era of the Pilgrims to the present day, has, it is true, enabled him to derive important advantages from our primary schools; but from these he has stepped forth upon the world's wide stage, a perfect tyro in everything appertaining to the great calling in which he is to engage. With the lawyer, the minister, and the doctor, the case has been the reverse. In the primary schools and academies of New England, young minds are based on those principles of literature and science which constitute the foundation of the professional education they are subsequently to receive in the higher institutions. The great labor of instruction goes regularly on from the first; it commences with the abecedarian, and is consummated by the professor

> "In those institutions
> In whose halls are hung invincible armor
> Of the knights of old."

But no thought is accorded to the young husbandman. If he can read, write, cipher, tell whether his farm is located in the eastern or western hemisphere, and ascertain with correctness the periods of the rising and setting of the "greater and lesser lights" of heaven, it is deemed sufficient; it is "education enough" for one, the ignoble nature of whose calling necessarily associates him with brute beasts, and whose mind is supposed, or assumed, to be elevated but little above the brutes he drives. Now this is not as it should be. In the first place, we enter our protest against this false appreciation

of both the farmer and his profession. Where is the statesman, philosopher, or politician, even, so blind as not to perceive, that, should the plough stop, and the farmer relax, or pause from his exertions but for a single year, not only would all these boasted professions cease, but life itself. Over all this beautiful earth, so teeming with riches, the pall of desolation would be spread wide and deep. It is the hand of the patient, but neglected farmer, who fills, by his labor, the golden spoon of the capitalist.

It is his labor that builds and freights the proud argosies of commerce; it is his labor that sustains our manufactures, and spreads over the surface of the globe that net-work, upon which the iron horse "annihilates space," and along which the lightnings of Jove convey messages of love and hope, literally from the "rivers to the ends of the earth."

No scheme of improvement, no project of national aggrandizement, can be consummated without aid and assistance from the farmer. Yet is he neglected! Statutes and appropriations of public funds, for the dissemination of knowledge immediately associated with the practical pursuit of agriculture, are among the last things which will engross the mind, or enter into the schemes of the partizan legislator. And this, too, in a republican government, where the people are taxed annually more than eight millions for the support of the military.

How differently, and with how much wiser discrimination they order things in France—monarchical France! may be seen by the following extract from a letter written a few years ago by Mr. Walsh, who was residing in Paris:—

"We have regular reports of the sittings of the Convention of Agriculturists of the North. The government lends it all countenance and aid, and manifests a strong desire to establish societies and committees in every district of the realm. A general scheme for this purpose was submitted on the 7th instant by the inspector-general of agriculture, and was freely and fully discussed."

But it will, perhaps, be said, that the appropriation of money for this purpose would be injudicious, because farmers, as a class, have no desire to improve. That there is a reluctance on the part of many agriculturists to avail themselves of the

written wisdom of their predecessors and cotemporaries, I am by no means disposed to deny. But in this reluctance I discover the *force of habit*, and a corroboration of the *dictum*, that unless the farmer is educated to his profession, he will rarely be disposed to inquire or improve. The old mill-horse path, pursued under widely different circumstances, by his forefathers, satisfies his ambition and bounds his perceptions of the useful, so far as farming is concerned. He has no taste for reading, simply because he never learned to read with intelligence, and the natural consequence of this apathy is a morbid prejudice against all books and periodicals, in which the principles or practices of agriculture are discussed.

The Moslem dashed to pieces the microscope which showed him there were animalculæ in the food he ate; and one of the opponents of Galileo, when requested by that immortal, but long persecuted man, to look at the moons of Jupiter through the telescope which was proffered him, refused, for fear of being convinced of his error, and thus reluctantly forced from the position he had assumed.

Such is prejudice; and such at this day is its force over the minds of many of our agricultural friends, that they refuse to adopt any system, or to favor any innovation that has received the sanction of either pen or type. Science, in its application to the details of agriculture, should be taught thoroughly to all those who expect to obtain a livelihood by the cultivation of the soil.

The young should be educated for the business they are to pursue. A good knowledge of language is the basis of all education. When this has been secured, let the young man attend to those branches of knowledge that will fit him for his special calling. If a boy is to be a sailor, teach him navigation, astronomy, meteorology, geography, the principles of ship building, and a general knowledge of the commercial relations existing among nations.

If he is to be a lawyer, thoroughly imbue his mind with a knowledge of and taste for the classics. Teach him the history of nations, especially of their governments and laws; then let him plunge into the nature of general and special laws, and the formulas connected with their execution.

All that you have taught the sailor would be of little use to

the law student. All that the lawyer has learned would poorly fit the sailor to navigate his ship.

Teach the mechanic the principles of mechanism in general. Give him a thorough knowledge of the mechanical powers, and of their application to his particular pursuit. A knowledge of navigation, law or divinity, will not help him to make a cog-wheel, or contrive an instrument to suit a special emergency.

There is this evil about all our common schools, that all the pupils are required to study the same things. They are placed in classes, and carried together over a general course of instruction. The same fact exists to a great extent in our colleges.

Now this would all be very well if the course embraced only those things that are necessary to all, and further opportunities were afforded to acquire those special things that are needed by each. But the common school is the only school which most of our youth are enabled to attend. Whatever they learn of a scientific character, they must learn there. Those who can afford it, attend special schools to learn particular things. We have schools to teach navigation, book-keeping, chemistry, mathematics, medicine, law, and divinity.

To meet the wants of agriculture, we must either have special schools for acquiring those sciences necessary to its successful pursuit, or those sciences must be taught in our high schools throughout the State.

I know no good reason why a department might not be created in all these schools, in which should be taught, by the principal, or by some qualified teacher employed during the winter months for this special purpose, a knowledge of the elements of inorganic, vegetable, and animal chemistry, of physiology, geology, botany, physical geography, and the general principles of agriculture.

These subjects could not all be taught in one winter, but they could in two, three, or four. So many persons are interested in agriculture that one, two, or three schools would not meet the demand. A class needs to be formed and instructed in every town in the State. Let such a class be instructed by competent persons,—and competent persons would soon be found, if there were a demand for their services,—and our

young men might be safely left to themselves to make more critical observations, and to engage in the experimental research into the comparative value of crops, and the best methods of producing them; into the modification of soils, by mixing, manuring, and draining them; into the rotation of crops, and the best means of preserving them, and of extracting from them their nutriment; into the selection of animals, and the best modes of preserving their health, and increasing their growth and productiveness, and the various kindred subjects, and in regard to which we need definite and accurate information.

The enterprise of our young men only needs to be enlightened by sound elementary knowledge, and guided by laws of science, and it would work out those results which the best interest of our country demands. Give to a young man a good knowledge of his own business, and a taste for reading, and in these days, when the world is flooded with books and newspapers, he will gather from reading, from observation, and from intercourse with men, all the knowledge that he needs of politics, of history, and of the avocations of other men.

There exists a great error in our whole system of education, necessarily incident to the condition of a new country, and which time and circumstances will correct. By the theory of our government, every man may aspire to every office. In former days, many individuals were called to fill a variety of places. The same man often acted as a farmer, a mechanic, a judge, and a military officer. He made shoes and made laws; raised corn and fought the enemies of his country. The young were so educated that they might be fitted to act as circumstances should demand. But the times have changed, and we must change with them, or find ourselves behind the times. The divisions of labor have become fixed. Such is the keenness of competition, that success can only be hoped for, by the devotion of one's whole energy to his special pursuit. There can be no doubt that perfection in the several sciences and arts, can only be attained by division and subdivision of labor, and reference should be had to this fact, in arranging the education which the young are to receive; otherwise, time that might be profitably employed in acquiring knowledge essential to success in business, might be wasted.

There are other reasons, of a moral and psychological character, which urge us to give the young a much more extended course of study on physical subjects, than they have hitherto received. Nothing, so well as the study of such subjects, gives them a habit of accurate observation, and careful deduction from facts, and saves them from hasty and unsound conclusions.

Nothing so contributes to that minute attention to the phenomena that we witness around us, by which we are daily and hourly accumulating useful knowledge.

Nothing so effectually calms the passions and leads to habits of thought and sobriety, as the constant presence of the beautiful, the grand, and the wonderful in nature, and the consciousness that there are laws working and controlling, and guiding and modifying all things around us and in us, and to which we ourselves are amenable.

Then, again, we are constantly taught lessons of trust, of hope, and of benevolence, by observing the course of nature, and the operation of the laws of Providence, and should be led to their exercise in our own lives. In fact, nothing so directly tends to teach us reverence for the Great Author of nature as the study of his works, in the exercise of a proper spirit.

These, then, are some of the qualifications which the young farmer should possess. How he shall acquire them is a much more difficult matter to determine. A few points will be mentioned.

There are, undoubtedly, good jewellers, carpenters, printers and farmers, who were not engaged in either of these occupations in early life; but they became so from an unusual taste and aptness for the profession of their choice. The general result is, that those who have not been familiar in their youth with the business in which they are engaged, rarely distinguish themselves as good workmen, or accumulate property in its prosecution.

If this be so, it becomes a matter of the first importance that the farmer shall have been initiated into all the operations of the barn, the garden, and the field, in early life.

Like those of the printer at his case, or the smith at his forge, if the manipulations of the farm are once thoroughly learned in youth, they will ever afterwards be familiar.

Some mode, then, must be devised, by which *the practices of husbandry shall become familiar while the intellectual foundation is being laid;* and this is the point which has been sadly overlooked. While the mind is stored with facts, their application is entirely neglected, and the young farmer enters upon his estate, to conduct his affairs, as would the landsman, called to the helm of a ship, when approaching a lee shore! He finds himself surrounded by implements whose names are familiar, and whose uses he has often discussed and commended, but of their fitness for any particular work he knows little or nothing! He becomes oppressed with the thought that he is master of the estate but not of its operations, and in these must remain the servant of others, until, by dint of experience, he has acquired that knowledge which should have been gathered with his theories.

This is the *first false step* in the education of the young farmer. His *practical* progress should begin and keep pace with his *intellectual* progress. By a system of familiar teaching from the parent, he must be called to the barn, the garden, the field and workshop, and made acquainted with the duties of each. And this must be done by a course so gradual and natural, and with so little interruption to the indulgence in amusements agreeable to every youth, that he shall scarcely be able, in his riper years, to say when his practical education began. It must come so kindly and fitly with other things about him, so in consonance with his views and desires, that he shall have no knowledge of mental effort in acquiring the uses of all the implements of the farm.

At the same time, he must be led quietly along into the higher regions of agricultural pursuit—into what may be termed, without too much license, *the poetry of the farm.* He must learn that the commonest things about him involve some great principle, necessary to be understood. For example: if watering the cattle, he may be required to give the principle of raising water by the pump, or some other question in hydraulics; if teaming or ploughing, why the work is more easily performed when the team is near the load than when further removed; if in the morning, when the grass is sparkling with pearly drops, *how dew is deposited;* or, if in the silent and impressive evening hours, why he is chilled in passing the valley,

and finds again the genial warmth on ascending the hill. And when around the fireside, daughters may state the principle upon which the smoke ascends the chimney, and why the air is warmest at the top of the room; or why the "pitcher sweats," as it is called, filled with cold water, in the hot noon, or the "dough rises" in the pan; for it is as important that the young maiden shall be rightly taught as the young man.

Every opportunity must be improved to press upon the mind the wonderful operation of the laws about him. These will form topics of contemplation while guiding the plough, or cradling the grain, and so fill the mind with the beneficence and beauty with which Infinite Wisdom has encircled him, as to free farm-work from all semblance of drudgery, and the mind from all tendencies to discontent.

With such kindly intercourse, the teacher and the taught will store up information that will be practical and useful in the future operations of the farm. But this is not all that will be gained. Going back to first principles, and understanding something of the wonderful mechanism of his animals and plants, fills his mind with intimate and delightful associations existing in the relations of his occupation. He not only studies the frame-work of his domestic animals, and the formation of his plants, but the lesser animals that seek their living on his domains.

If the birds of the air are cared for, although they "neither sow nor reap," and "neither have store house nor barn," he will find them worthy of his study, and in this exercise increase his own happiness and ability to manage his affairs. He will investigate, even though it be but slightly, everything that has a direct bearing upon the profession in which he is engaged. The insects, varieties of stock, soils, atmospheric changes and influences, the seasons, and growth and nature of plants, budding, grafting, transplanting, and hybridizing, will all receive attention, and a partial knowledge of them will be easily acquired through the intellectual foundation which has been so carefully laid. But there is still another point, utterly neglected, if even ever thought of, *in the education of the young farmer.*

No one would trust his interests in a suit at law with an

advocate who was not familiar with Vattel, Blackstone, and other lights and guides in that profession; and so of the clergyman and physician. But the first case in the Commonwealth is yet to come to my knowledge where the young farmer has passed through a systematic course of reading in agricultural lore; or where he is generally acquainted with the writings of those who have devoted their talents to the interests of their fellow men in this department of science.

The names and opinions of Markham, Tull, Young, Marshall, Forsyth, Bakewell, Loudon, Davy, Johnston, Liebig, Dickson, Boussingault, Coleman, Buel, Fessenden, Downing, Norton, and a great many others, whose writings are as important to the young farmer, as Coke and Littleton are to the young lawyer, remain as a dead letter to most of the husbandmen in the State. For the want of this reading, the young may fall into the errors of Tull, or cloud their usefulness by mingling in politics, as did Young. It has been stated by high authority that Tull was the "real founder of every recent improvement that has been made in the agriculture of England." And yet, important as those improvements must be to us here, the writings of that individual are scarcely better known than the hyeroglyphics on the obelisks of Egypt!

We have a fine agricultural literature, full of sound and valuable teachings, sometimes made attractive by ornate descriptions, with beautiful imagery and illustrations, and thus possessing a charm for the young and imaginative equal to any class of literature of the age. Most of this lies unused in the "old fields" of neglect, for want of proper effort to bring it into notice and use.

Some of the most attractive volumes in the language, upon the subjects of chemistry, physiology, botany, geology, upon the philosophy of the seasons, the effects of climate, and the poetry of scientific agriculture, have sprung from the ablest minds of the age. Some of these works admirably illustrate the wonderful phenomena in nature, on the farm, and give the farmer's occupation an interest heretofore unknown.

After a fair remuneration for his labor, there is no one thing which will afford such contentment to the farmer as a general knowledge of the literature of the great art. And I earnestly

press upon the Board, the importance of devising some measures to diffuse this knowledge more generally among the people.

One thing is obvious. Something must be done to counteract the prejudice which at present exists in the minds of our young men against farming. The profession is unpopular, and agriculture, over a vastly preponderating extent of our territory, is not only unpopular, but to great numbers *unprofitable*. Our farms are rapidly deteriorating, and every year beholds thousands and tens of thousands of our most intelligent and enterprising husbandmen selling out and moving either into our cities or to the far West.

But it will be said that this should not be regarded as a calamity. Why? Because the fewer the tillers, the higher the price of their products. But will such sophistry silence the apprehensions of the statesman? I think not. Those who forsake their farms are, in nine cases out of ten, the most industrious and intelligent of their class; they have become disgusted,—partly, it is true, in consequence of their incapacity to lay up money,—and their example is before the rising generation. Few young men who can obtain a clerkship, or a position behind the counter of a grocery or dry goods store, in a factory or on a steamboat, will think of laboring on a farm. There is something disgraceful even in the idea. But throw open the doors of science; exhibit to them the beauties and capacities of this shamefully neglected branch of industrial life, and the tables will soon be turned. Let us have Liebigs and Loudons, Davys and Jeffersons, issuing from our agricultural colleges, and charming the world with the eloquence of their lore, and let these men and their sons cleave to the soil, and who then will point at the farmer as a fit object for ridicule and reproach?

The objects of agricultural education, therefore, should not only embrace the improvement of the soil, but, by an ulterior or secondary action, the reclamation of *the popular mind* from the errors into which it has been urged by the *neglects* of the farmer.

There is an all-powerful instinct implanted in man's nature which impels him irresistibly to pursue that which is most honorable in the world's esteem. And in the present economy

of society, it unfortunately happens that what is deemed most honorable is most profitable. There may be exceptions, but as society is at present constituted this is to be regarded as a rule. The village merchant—sometimes, it is true, by dishonest means—realizes his thousands, while the poor farmer is running almost as rapidly into debt. The manufacturer, and broker, and even the mechanic, "put money in their purses." This is seen and understood by the sons of farmers, and their early prepossessions against a farmer's life are but too often strengthened and confirmed, when from the admiring contemplation of these more lucrative employments they withdraw their bedizened eyes to fix them upon the poverty, wretched destitution and squalor, even, of home. But *science*, and the general diffusion of useful knowledge, will be found a ready corrective of this, at present, great national evil. Let the education of the young farmer be such as will tend to draw his affections towards the endearing and ennobling objects of rural life, rather than to divert them; let them behold the wealthy and intelligent engaged in the pursuits of agriculture, surrounded by the elegancies and embellishments of polished life, and his mind will at once derive happiness from a pursuit with which he now beholds himself identified, and which, consequently, he contemplates with satisfaction and delight.

January, 1853.

BEST METHOD OF LAYING DOWN LAND TO GRASS, AND CONTINUING THE PRODUCT.

BY FRANCIS BREWER.

It may appear to many that the subject here presented is of too small consequence to require examination, that much, perhaps all, that can be said, is now before the public. After all that can be said, every individual will pursue his own opinion, and follow the dictates of his own discretion. This right we will not invade.

* * * * * *

The methods which now most generally prevail in the eastern and middle States, of seeding their grass lands, is of a very recent date, but is rapidly gaining the confidence of the public mind. Indeed, we need not go back more than ten years to commence our testimony to its rise and progress, for in the year 1843 we find that a premium of $200 was awarded to Benjamin Poor, of West Newbury, for the best cultivated farm within the State of Massachusetts. In their report upon this subject, the committee of the State Society say: "Mr. Poor states that after his crop of hay is taken off the ground, the land is then ploughed, laying the furrows flat; a liberal top-dressing is then applied, and rye and grass seed is sowed and rolled in. A bushel, and sometimes a bushel and a half of grass seed per acre is used. Mr. Poor, after using much of his grass for soiling his stock through the summer, estimates his crop of hay on hand the first day of August at 157 tons. He mows 86 acres."

R. L. Pell, of Pelham, Ulster County, N. Y., having been requested to make public the experiment he has tried and fully tested, says, in January, 1844: "I now submit them with all due deference to the opinions of my superiors in agriculture. When preparing a meadow or upland, I usually seed on wheat, sowing in the fall, half a bushel of Timothy seed to the acre, and the following spring, after a moderate fall of snow, one bushel of clover seed, top-dressed with charcoal dust, and

rolled. From land so treated, I cut the last season *three* tons of hay to the acre."

The viewing committee on farms in Norfolk County, in their report for 1844, say:—"The farm of Cheever Newhall, in Dorchester, Mass, furnishes one of the best examples of productive husbandry we have anywhere met with." And upon the subject of sowing grass seed, say: "Mr. Newhall decidedly prefers the fall, for sowing grass seed; thinks August too early for his farm, but has been very successful in late sowing; showed a beautiful piece of sward sowed down on the 7th of October, 1843."

The editors of the Albany Cultivator, in answer to an inquirer in 1845, say: "We should prefer the latter part of August for sowing grass seed."

In 1847, Frederick Holbrook, of Brattleborough, Vt., in a communication to the Cultivator, on the subject of seeding grass lands, says: "A *new practise* has obtained among some farmers in this section of seeding down to grass upon the green sward furrow, in the latter part of August or the first of September. When a piece of land becomes 'bound out,' as the phrase is, or ceases to yield a good swarth, it is carefully and nicely turned over by the plough at this season and rolled down. Fifteen to twenty loads of compost are then spread to the acre and harrowed both ways of the furrow; the grass seed is then sowed and covered with a brush harrow. And among other advantages derived from this process, says: "The land may be thus kept highly productive in grass with less manure than by the system of ploughing and planting one or two years and then seeding with a grain crop."

And the same writer, after visiting the farm of Clark Rice, Esq., in Dummerston, Vt., in 1848, says: "Mr. Rice has several acres of grass land, too moist to plough and cultivate in the spring, but obtains fine crops of hay from this land by ploughing it in August, when a light dressing of compost is spread on top of the furrows and harrowed in. The land is then seeded down to grass again, without sowing grain; and this process is repeated as often as the more valuable grasses have been supplanted by wild grass."

Mr. Levi Durand, of Derby, Conn., in a very elaborate article communicated to the Cultivator in 1849, on seeding grass

land, says: "Of late years we have been more inclined to fall seeding on winter grain as more certain of a good catch for Timothy and redtop;" and says, further: "A very good plan is practised in Massachusetts, where meadow lands are rather moist and are intended to be kept in grass without cropping. Sometime in August, the ground is nicely turned over with the plough, the ground rolled down, and, if to be had, a good dressing of compost is spread on; then the grass seed is sowed and harrowed in evenly with a fine-tooth harrow, and made smooth with the roller. Managed in this way, the land can be *constantly* in grass. As to the amount of seed per acre, no certain rule can be laid down. Light soils, as a general rule, require more seed than moist ones. I have just now (October 15) seeded down two acres with wheat, with one bushel redtop and a half bushel Timothy. This gives three pecks of seed to the acre." Having thus followed the direct testimony for the last eight years, leading to certain conclusions, we feel perfect security in the authorities referred to, and only add our own observation as additional evidence, and refer to the practise of Horatio Sargeant, of Springfield, whose operations in agricultural pursuits are often referred to. He practises the same rule, varying as circumstances require; sometimes sowing upon reversed sward and mixing turnip seed instead of winter grain, or immediately after the removal of his corn, potato, or tobacco crops. Other judicious cultivators in this vicinity are pursuing the same course.

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These views are, with much deference, respectfully submitted.

FARMERS' CLUBS.

BY STEPHEN REED, M. D.

In the material world, close contact with a little motion is indispensable to heat, life, and light. Strange as it may seem, this is no less true in the province of mind. We all know, that unless mind comes in contact with mind, and thought awakens and calls out thought, an alpine cap of eternal snow is not more dead and cold than the perceptive and reasoning faculties of our race. The farmer is placed under peculiar temptations. The earth, with whose embrace he comes more closely in contact than any other person, is a bounteous mother. Unasked, she makes her guests large donations, and is ever ready to return, in large measures, all the favors she receives from them. In the farmer's hand she places her gifts, to be dispensed by him to others. His mill is first on the stream, and water, if water there is, to him is sure. The man below, whose supply of water is short and precarious, is the man from whom we expect new discoveries and valuable improvements in the construction of water wheels and the application of water power. Mind, acting with mind, may do more for the latter, than position for the former. Yet, while this is acknowledged, the temptation is strong in the former to grind on in the old way.

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If it is true, then, that the mind is the measure of the man, the farmer must be educated, or he must sink from his present position. He must be *better* educated, or he cannot hold his present *relative* position. It is the true province of education to draw out, and paradoxical as it may seem, the more you draw out of the mind, the more there is left. The more it gives to-day, the more it will be able to give to-morrow. True, you may tumble knowledge into the mind as you may tumble goods into your house, until you cannot get in yourself, or make any use of what is in it, but this is not education. It is not that action of mind, that mental labor, which produces mental power. Far different from this is the Farmers' Club.

Giving is emphatically the order there. The club organized, the first act is introduced by some member, giving to his fellows the results of his reading, his thinking, and his experiments on the soil best adapted to the different varieties of potatoes; on the breed of cattle best suited to the purpose of him whose business it is to furnish butter for the market, or on whatever subject the club have selected for the evening's discussion. He now turns his own eye to the strange reservoir from which he has been drawing. It has given all it had. Yet, when it is examined, it is found fuller than before; and what most surprises him, is the clearness of the water. Objects, which before seemed dim and indistinct, now show their minuter parts. Were you to call upon him to draw again from that same fountain, it would give you a clearer, purer draught. But the giving has enlarged the capacity for receiving. When his neighbor comes, in turn, to speak of his experiments and their results, he sees more clearly the points of agreement, and investigates more closely the causes which have led to different results. The whole process is most strictly an educating process. Thought draws out thought: mind acts upon mind. No matter if there is a little friction, raising, in a slight degree, the temperature. Every chemist knows that in his laboratory this is often necessary to the perfect success of many experiments.

The temptation for the farmer to eat the first fruits of his labor, and sit down in comparative inactivity, needs the excitement a farmers' club is well calculated to give. It arouses the mind, stimulates inquiry, and breaks up that routine of thought and conversation which six evenings in the week, in the language of a school-teacher who boarded around the district, "begins with grandfather's cows, and ends with the feats which father's horses used to perform." But where a well-regulated farmers' club exists, the most stereotype mind will be moved. The opinions of others will be noticed, thought about and talked about, perhaps at first only in ridicule, but even this is almost infinitely better than that lethargic state, which makes the Russian serf a serf, and the millions of France the willing subjects of the power of mind.

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The farmers' club is a labor-saving machine, operating on

the true principle of a division of labor. One may investigate, and the results become the property of all. The rock on which our fellow split, may be shunned by us. To the breeze which filled his sails, we may spread our canvas. If we fail where he succeeded, it stimulates the mind to a closer examination, to detect the causes which produced a difference in results. If, for instance, in a discussion upon ploughing, a member advocates a new system, and in time brings among us a new kind of plough fitted for the work he advocates, how carefully we watch the progress of his work, and the result as shown in his crops. If he is successful, we follow his example. If he fails, we laugh at him for what we should hank him, and then steer clear of the rock on which he struck.

APPENDIX.

LAWS OF MASSACHUSETTS IN RELATION TO AGRICULTURAL SOCIETIES, UP TO MAY 10, 1853, INCLUSIVE.

CHAPTER 42.*

OF AGRICULTURAL CORPORATIONS.

SECTION

1. Incorporated agricultural societies may be entitled to an annual sum from the treasury, by, &c.
2. When unincorporated societies shall be entitled to a charter.
3. Previous duty of societies claiming allowance from the treasury.
4. Premiums to be offered by societies, &c.

SECTION

5. Surplus money, to be put at interest.
6. Premiums for raising trees for ship timber.
7. To what societies the preceding provisions extend.
8. Cattle shows regulated.
9. Penalty for violating regulations.
10. Extent of foregoing provisions.
11. Marshals to be appointed, to execute regulations.

SECTION 1. Every incorporated agricultural society, which shall have raised or may hereafter raise, by contribution of individuals, and put out at interest, on public or private security, the sum of one thousand dollars, as a capital stock appropriated for the uses of such society, shall be entitled to receive, in the month of October, annually, out of the treasury of the Commonwealth, the sum of two hundred dollars, and in that proportion annually, for any greater sum so contributed and put at interest, as a capital stock; provided, that no agricultural society shall receive from the treasury more than six hundred dollars in any one year.

SECT. 2. Any agricultural society, formed within any county or counties, wherein there is no incorporated society for the same purpose, and which shall raise and put out at interest, as a capital stock, not less than one thousand dollars, for the uses of such society, shall receive, on application to the legislature, an act of incorporation, in the usual

* Revised Statutes.

form, and with the customary rights and powers; and after such incorporation, the society shall have all the privileges, secured to other agricultural societies, on complying with the terms and provisions herein contained; provided, that no agricultural society shall have the benefits of this section, unless the same be formed in a county, or in an association of counties, including a population of not less than twenty-five thousand inhabitants.

Sect. 3. Every agricultural society, which shall claim the said allowance out of the public treasury, shall, in the month of October, annually, file in the office of the Secretary of State, a certificate signed by the president and treasurer of such society, specifying under oath the sum actually contributed, and put at interest, and then held by them well secured as a capital stock; and a warrant shall be drawn for the sum to which such society may be entitled.

Sect. 4. Every agricultural society, which shall receive the said allowance from the public treasury, shall offer annually, by way of premiums, or shall apply otherwise, at their discretion, for the encouragement or improvement of agriculture or manufactures, a sum not less than the amount annually received, as aforesaid, out of the public treasury; and they shall also transmit to the office of the secretary, in the month of January, annually, a statement of their proceedings in relation to the expenditure of such moneys, specifying the nature of the encouragement proposed by the society, and the objects for which their premiums have been offered, and to whom they were awarded; and shall accompany the same with such general observations, concerning the state of agriculture and manufactures, in the State, as they may deem important or useful.

Sect. 5. All moneys offered for premiums, which shall not be awarded or paid, shall be put out at interest, and added to the capital stock of each agricultural society.

Sect. 6. Every agricultural society, which shall receive the said public allowance, shall offer, annually, such premiums and encouragement, for the raising and preserving of oaks, and other forest trees, as to them shall seem proper, and best adapted to perpetuate, within the State, an adequate supply of ship timber.

Sect. 7. The foregoing provisions shall not extend to any agricultural society, which has been, or hereafter may be, incorporated for any territory less than a county.

Sect. 8. All incorporated agricultural societies may, by their officers, define and fix bounds of sufficient extent, for the erection of their cattle pens and yards, and for convenient passage ways to and about the same, on the days of their cattle shows and exhibitions, and also for their ploughing matches, and trials of working oxen; within which

bounds no persons shall be permitted to enter or pass, unless in conformity with the regulations of the officers of said societies, respectively.

Sect. 9. If any person shall, contrary to the regulations of the said officers, and after notice thereof, enter or pass within the bounds so fixed, he shall forfeit a sum not exceeding five dollars, to be recovered in an action on the case, for the use of the society, by the treasurer thereof.

Sect. 10. The foregoing provisions shall not authorize such societies to occupy, or include within the bounds which they shall fix for the purposes aforesaid, the land of any person, without his consent, nor to occupy any turnpike or public highway, in such a manner as to obstruct the public travel.

Sect. 11. The officers of every such society may appoint a sufficient number of suitable persons, inhabitants of the county, to act as marshals, at cattle shows and exhibitions, and they shall have and exercise all the powers of constables, in relation to the preservation of the public peace, and the service and execution of criminal process, within the towns, respectively, where such shows and exhibitions may be held; and any such criminal process may be directed to them accordingly; and they shall exercise their said office, from twelve o'clock at noon of the day preceding the commencement of such shows and exhibitions, until twelve o'clock at noon of the day succeeding the termination thereof, and no longer.

CHAPTER 31.—1842.

AN ACT RELATING TO RETURNS FROM AGRICULTURAL SOCIETIES.

Section		Section	
1.	Returns, in 1842, to be made on or before April 1st, to entitle societies to the allowance provided by law.	2.	After 1842, returns to be made within the month of January, to entitle to allowance.

Sect. 1. No agricultural society which, on the first day of April, in the year one thousand eight hundred and forty-two, shall have neglected to make returns to the Secretary of the Commonwealth, as required by the first and fourth sections of the forty-second chapter of the Revised Statutes, shall be entitled to receive the allowance from the Commonwealth, as therein provided.

Sect. 2. No agricultural society, which shall not have made returns to the office of the Secretary of the Commonwealth within the month of

January, in the year one thousand eight hundred and forty-three, and within the month of January in each succeeding year thereafter, as required by the sections of the Revised Statutes mentioned in the preceding section, shall be entitled to receive any aid from the Commonwealth. [February 25, 1842.]

CHAPTER 111.—1845.

AN ACT REQUIRING ADDITIONAL RETURNS FROM AGRICULTURAL SOCIETIES.

SECTION
1. Agricultural societies to make certain returns annually to the Secretary of the Commonwealth.
2. Passages in reports, &c., worthy of public notice, &c., to be marked.
3. Copy of this act to be transmitted by the Secretary.
4. Abstract to be annually published by the Secretary.
5. Penalty for neglect to comply with this act.
6. Repeal of inconsistent provisions.

SECT. 1. Every agricultural society entitled to receive money from the treasury of the Commonwealth, shall, in addition to the return of premiums paid, now required to be made in the month of January, make full returns of their doings into the office of the Secretary of State, on or before the first day of January, in every year, embracing all reports of committees, and all statements of experiments and cultivation, deemed by the officers of the several societies worthy of publication.

SECT. 2. The secretary of each society, whether his return be in printed or manuscript form, shall mark, in a manner to be easily distinguished, those passages in the several reports and statements which he regards as most worthy of public notice, study and application.

SECT. 3. The Secretary of State is directed to transmit a copy of this act to the secretary of every incorporated agricultural society in the Commonwealth, on or before the first day of September, 1845.

SECT. 4. The Secretary of State is hereby directed to cause as full an abstract from said returns to be made and published in each year, for distribution, as in his judgment will prove useful.

SECT. 5. Any agricultural society which shall neglect, in any year, to comply with the provisions of this act, shall forfeit its claim to bounty from the Commonwealth the succeeding year.

SECT. 6. Any parts of passed acts inconsistent with the provisions of this, are hereby repealed. [March 7, 1845.]

CHAPTER 69.—1847.

AN ACT RELATING TO AGRICULTURAL SOCIETIES.

SECTION
1. Certificate of capital stock to be filed annually in the Secretary's office, by agricultural societies claiming the bounty. Return of doings, expenditures, &c., to be made at the same time.
2. How amount of bounty to be ascertained.
3. Bounty forfeited by neglect.
4. Abstract of returns to be published annually for distribution.
5. Forfeitures incurred by R. S. ch. 42, § 9,—how prosecuted for and paid over.
6. Secretary to transmit copies of this act to agricultural societies.
7. Acts, &c., repealed.

SECT. 1. Every agricultural society which shall claim the bounty of the Commonwealth, according to the provisions of the first section of the forty-second chapter of the Revised Statutes, shall, annually, on or before the tenth day of January, file in the office of the Secretary of the Commonwealth, a certificate, signed by the president and treasurer of such society, specifying, under oath, the sum actually contributed and put at interest, and then held, well secured, as a capital stock.

Every such society shall, at the same time, make a full return of its doings, signed by its president and secretary, embracing a statement of the expenditure of all moneys, specifying the nature of the encouragement proposed by the society, the object for which its premiums have been offered, and to whom they have been awarded, and including all reports of committees, and all statements of experiments and cultivation, regarded by said president and secretary as worthy of publication. The return, whether in printed or manuscript form, shall be marked in such manner, that those passages in the several reports and statements deemed by such officers most worthy of public notice, study, and application, may be easily distinguished.

SECT. 2. The amount of bounty to which any agricultural society may be entitled for the year one thousand eight hundred and forty-seven shall be ascertained by the certificate to be filed in the month of October, according to the provisions of law as heretofore existing; and for the year one thousand eight hundred and forty-eight, and each year thereafter, by the certificate previously filed by such society, according to the provisions of this act.

SECT. 3. Any agricultural society which shall neglect, in any year, to comply with the foregoing provisions, shall forfeit its claim to the bounty of the Commonwealth the year next succeeding.

Sect. 4. The Secretary of the Commonwealth is hereby directed to cause to be made and published, in each year, for distribution, as full an abstract as, in his judgment, will be useful, from the returns aforesaid of the agricultural societies.

Sect. 5. Any person who shall incur the forfeiture mentioned in the ninth section of the forty-second chapter of the Revised Statutes, may be prosecuted, by complaint before any justice of the peace, who shall have jurisdiction thereof; and all forfeitures so recovered shall be, by said justice of the peace, paid over to the county treasurer, for the use of the county.

Sect. 6. The Secretary of the Commonwealth is hereby directed to transmit a copy of this act to the secretary of every incorporated agricultural society in the Commonwealth, on or before the first day of September next.

Sect. 7. The thirty-first chapter of the acts of the year eighteen hundred and forty-two, also, the one hundred and eleventh chapter of the acts of the year one thousand eight hundred and forty-five, and all parts of acts heretofore passed, inconsistent with the provisions of this act, are hereby repealed. [March 11, 1847.]

CHAPTER 215.—1851.

AN ACT TO EXEMPT AGRICULTURAL SOCIETIES FROM TAXATION.

Be it enacted, &c., as follows:

From and after the passage of this act, the property, both real and personal, of all agricultural societies, which are now or may hereafter be incorporated, shall be exempted from taxation. [May 21, 1851.]

CHAPTER 246.—1852.

AN ACT CONCERNING AGRICULTURAL SOCIETIES.

Be it enacted, &c., as follows:

So much of the funds of incorporated agricultural societies as shall be invested in real estate, buildings and appurtenances, for the use and accommodation of said societies, shall be held to be so invested as to entitle them to receive the bounty of the Commonwealth, in the same manner as if put at interest, as provided in the first section of the forty-second chapter of the Revised Statutes. [May 18, 1852.]

CHAPTER 142.—1852.

AN ACT TO ESTABLISH A STATE BOARD OF AGRICULTURE.

Be it enacted, &c., as follows:

SECT. 1. A State Board of Agriculture is hereby established, to consist of His Excellency the Governor, His Honor the Lieutenant Governor, and Secretary of State, *ex officiis;* of one member from each of the agricultural societies in the Commonwealth, that receives an annual bounty from the State, and of three members to be appointed by the Governor and Council. Said members shall hold their offices for three years, except as hereinafter provided; and the Governor and Council, and the agricultural societies as aforesaid, shall, within sixty days after the passage of this act, appoint said members; and afterward whenever vacancies shall occur.

SECT. 2. At the first meeting of this Board, appointed as aforesaid, and called by His Excellency the Governor, the three members appointed by the Governor and Council, and the members from the agricultural societies as aforesaid, shall be divided into three equal classes, as near as may be, and the term of office of the first class shall expire on the first Wednesday of February, in the year 1854; the second class on the first Wednesday of February, in the year 1855; and the third class on the first Wednesday of February, in the year 1856. The expiration of each class shall be determined by lot by the whole Board, and the vacancies thus created shall be filled by the Governor and Council, and by the respective agricultural societies in which such vacancy may occur.

SECT. 3. It shall be the duty of this Board to investigate all such subjects relating to improvement in agriculture in this Commonwealth, as they may think proper; and they are hereby empowered to take, hold in trust, and exercise control over any donations or bequests that may be made to them for promoting agricultural education, or the general interests of husbandry.

SECT. 4. The Board of Agriculture shall meet at the State House in Boston, at le .st once in each year, and as much oftener as they may deem expedient; and they are hereby empowered to employ a suitable person to act as Secretary of the Board, and to prescribe and determine his duties; but all the duties of the Secretary of the Commonwealth, relating to returns of agricultural societies, shall be performed by the Secretary of the Board of Agriculture; and all reports and returns now required by law to be made by said societies, shall be

made and returned to the Secretary of this Board. The Governor and Council shall determine his compensation, which compensation shall not exceed the sum of fifteen hundred dollars per annum; but no member of the Board shall receive any compensation for his services from the Commonwealth, except for personal expenses when engaged in the duties of the Board. And the said Board shall, annually, on or before the fourth Wednesday of January, by their chairman or secretary, submit to the legislature a detailed report of their doings, with such recommendations and suggestions as in their view the interests of agriculture may require.

SECT. 5. All laws inconsistent with this act are hereby repealed.

SECT. 6. This act shall take effect from and after its passage. [April 21, 1852.]

CHAPTER 127.—1853.

AN ACT IN RELATION TO AGRICULTURAL SOCIETIES.

Be it enacted, &c., as follows:

SECT. 1. The returns now required by law to be made by the several agricultural societies on or before the tenth day of January, shall hereafter be made on or before the tenth day of December in each year.

SECT. 2. The Board of Agriculture is hereby authorized to regulate the returns required of the different agricultural societies, prescribe forms, and furnish to the secretary of each society such blanks as said Board may deem necessary to secure uniform and reliable statistics.

SECT. 3. No agricultural society shall be entitled to receive any portion of the bounty of the State, unless it has complied fully with the regulations established by the Board of Agriculture, and made all the returns required by law. [April 8, 1853.]

CHAPTER 312.—1853.

AN ACT TO REGULATE AGRICULTURAL, HORTICULTURAL AND ORNAMENTAL TREE ASSOCIATIONS.

Be it enacted, &c., as follows:

Any ten or more persons in any county, town, or city, within the State, who shall, by agreement in writing, associate for the purpose of encouraging agriculture, horticulture, or improving and ornamenting

the streets and public squares of any city or town, by planting and cultivating ornamental trees therein, may become a corporation by such name as they shall assume therefor, by calling their first meeting and being organized, in the manner provided in the forty-first chapter of the Revised Statutes for the incorporation of the proprietors of social libraries and lyceums; and every such association, upon becoming a corporation as aforesaid, shall have, during the pleasure of the legislature, all the like rights, powers and privileges as the proprietors of such libraries; and may hold real and personal estate not exceeding ten thousand dollars. [May 10, 1853.]